



FUEL MAGAZINE: THE COAL
OPERATORS NATIONAL WEEKLY,
VOLUME 13

ANONYMOUS



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Fuel Magazine: The Coal Operators National Weekly, Volume 13

Anonymous

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FUEL

A WEEKLY JOURNAL DEVOTED TO COAL, COKE & KINDRED INDUSTRIES

Vol. XIII. No. 1.

CHICAGO, ILL., MAY 4, 1909.

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ANTHRACITE AGREEMENT FOR THREE YEARS

Miners Seemingly Gain Some Advantages Never Heretofore Granted by the Operators, Particularly the Right of Appeal to the Conciliation Board if Discharged Because of Membership in the Union—The Added Stipulations.

Text of the Agreement.

Whereas, Pursuant to letters of submission signed by the parties interested in 1902, "all question at issue between the respective companies and their own employes whether they belong to a union or not," were submitted to the Anthracite Coal Strike Commission to decide as to the same and as to "the conditions of employment between the respective companies and their own employes," and the said Strike Commission under date of March 18, 1903, duly made and filed its award upon the subject matter of the submission and provided that said award should continue in force for three years from April 1, 1903, and the said period has expired; and

Whereas, By agreement dated May 7, 1906, it was stipulated the "said award and the provisions thereof and any action which has been since taken pursuant thereto, either by the Conciliation Board or otherwise, shall be extended and shall continue in force for three years from April 1, 1906, namely, until March 31, 1909, with like force and effect as if that had been originally prescribed as its duration."

Now, therefore, It is stipulated between the undersigned, in their own behalf and so far as they have power to represent any other parties in interest, that the said award and the provisions thereof and any action which has been since taken pursuant thereto, either by the Conciliation Board or by written agreement between representatives of the employers and employes, shall be extended and shall continue in force for three years from April 1, 1909, namely, until March 31, 1912, with like force and effect as if that had been originally prescribed as the duration.

It is further covenanted and agreed as follows, viz.:

First. The rates which shall be paid for new work shall not be less than the rates paid under the Strike Commission's award for old work of a similar kind or character.

Second. The arrangement and decisions of the Conciliation Board permitting the collection of dues on the company property and the posting of notices thereon shall continue during the life of this agreement.

Third. An employe discharged for being a member of a union shall have a right to appeal his case to the Conciliation Board for final adjustment.

Fourth. Any dispute arising at a colliery under the terms of this agreement must first be taken up with the mine foreman and superintendent by employe, or committee of employes directly interested, before it can be taken up with the Conciliation Board for final adjustment.

Fifth. Employers shall issue pay statements designating the name of the company, the name of the employe, the colliery where employed, the amount of wages and the class of work performed.

In the absence of National President Thomas L. Lewis of the United Mine Workers of America, who, at the opening of the convention, received a telegram, announcing the sudden death of his brother, W. T. Lewis, in Cleveland, Ohio, E. S. McCullough, international vice-president, presided over the sessions of the tri-district convention of anthracite miners at Scranton, Wednesday and Thursday. A brief session without action had been held Tuesday, and another Wednesday morning. At the latter, which he called to order, President Lewis bore himself in the face of the bereavement in his family. The miners knew it and manifested their sympathy in the eloquent and respectful silence with which they received their chief as he assumed his office. A gloom hovered over the entire assemblage. It spoke greater volumes than applause could under the circumstances. The dramatic intensity of the situation was emphasized when President Lewis painfully told the convention in a few words of the death of his brother and asked to be excused from attending so that he could go west. As a final word he told the convention that the proposition that the district boards would present represented the very best terms that the committee could get from the operators and he hoped they would consider it calmly and deliberately.

The proposed agreement was read and distributed in printed form to the delegates and was discussed. It was then ratified by the miners. What discussion there was indicated that some of the delegates were not entirely satisfied with the outcome of the negotiations, but this was anticipated in a convention of nearly four hundred different minds, and it was not strong enough at any time to indicate that the convention would do anything finally but ratify the proposition. No one officer or delegate thinks the agreement approaches anything near the ideal, but the majority appeared to appreciate that it is the best proposition the miners could obtain from the operators in view of circumstances at this time.

The morning session adjourned early in sympathy with President Lewis. In the afternoon an executive session was held, and among other business was the authorization of a telegram to the governor asking that he veto the garnishee bill permitting merchants and others to attach 25 per cent of the wages of creditors.

The agreement was finally signed in Philadelphia on Thursday. The signers "on behalf of the operators were George F. Baer, president of the Reading; E. B. Thomas, president of the Lehigh Valley; W. H. Truesdale, president of the Delaware, Lackawanna & Western; L. F. Loree, president of the Delaware & Hudson; T. P. Fowler, president of the New York, Ontario & Western; Morris Williams, president of the Susquehanna Coal Company, and Joseph L. Cake, an independent.

The men who signed "on behalf of the representatives of the anthracite mine workers," were, besides Mr. McCullough, Adam Ryscavage, president, and John T. Dempsey, secretary, of District No. 1; John J. Waters, president, and Andrew Matti, vice-president, of District No. 7; John Fahey, president, and George W. Hartlein, secretary, of District No. 9.

A resolution of sympathy on the death of W. T. Lewis, State Commissioner of Labor of Ohio, was also adopted.

In reply to a vote of thanks to the officers of the union for their efforts to get more for the men, Secretary Dempsey said that they had done all that human beings could and reminded the delegates that their organization was one of the few unions that have made agreements with their employers this year that did not have to except a reduction in wages.

The Operators' Explanation.

The operators made the following explanation of the stipulations added to what is otherwise the renewal of the three-year agreement which expired March 31:

"The operators are gratified that peace and quiet are assured in the anthracite region for the next three years. The agreement signed to-day extends the award of the Strike Commission of 1902 until March 31, 1912, and contains, besides, five stipulations added at the request of the mine workers' representatives.

"The provision regarding new work is the one to which the operators agreed when they met the mine workers' committee in Philadelphia on April 8.

"The arrangement for the posting of notices and the collection of dues on the companies' property was made in the spring of 1906, and is now incorporated in the agreement. This has not been a matter of dispute in the conferences of the last few weeks.

"The third additional stipulation, referring to the discharge of employes is contained in the award of the Strike Commission, and has been in force for six years, but it is added to the agreement at the request of the representatives of the mine workers.

"The understanding that an attempt shall be made to settle all grievances directly, before an appeal to the Conciliation Board, is in line with what the operators have always desired. They are quite willing to have this definitely stated in the agreement, though they consider that it comes within the general agreement extending the award of the commission.

"The agreement for more explicit pay statements is made because the mine workers' representatives claim that at some collieries confusion to the men has resulted from incomplete statements."

Mr. McCullough, speaking for the miners, said he was delighted with the outcome.

"I feel that we have gained much," he declared, "in that the spirit which the operators have manifested is a large step in the direction of recognizing the union. That spirit shows that the operators trust the union and rely on the influence wielded by its members. But the thing I rejoice in more than all is the moral victory we have won. The attitude of the operators has been such that we feel ourselves drawn much closer toward them. That is a great thing, a victory for both sides. 'I did not expect that recognition would be granted if Mitchell could not get it in 1906, when the industrial situation was more promising of that result than it now is. How could we hope to gain the point in 1909?'"

May dawned with a glimmer of hope to the retail coal dealer. The snow storm was such as few large cities could have offered on that date.

WAGES AND MORALS RISE OR FALL TOGETHER

In a discussion of "religion as it is related to the social question," at the session of the Congress of Religious Liberals in the Friends' Meeting-house, Philadelphia, last week, John Mitchell, former president of the United Mine Workers, declared that there was an intimate connection between low wages and a low tone of morals.

"I wish to lay down as fundamental," said Mr. Mitchell in beginning his address, "the claim that a high religious and moral standard is not consistent with a low industrial ideal. The man who comes mentally and physically exhausted from 10 or 12 hours of labor; who has worked in a badly ventilated mine or factory, or whose home is bare and cheerless because his low wages will not permit improvement, is much more apt than his fellow who has worked eight hours amidst healthful surroundings to seek that stimulus and relaxation which is detrimental to his health and his morals.

"In so far as the labor movement contributes to the physical, intellectual and moral development of the workman it is going hand in hand with the church, which directs its energies toward the moral and spiritual uplift of the people. There can be no fundamental antagonism between religion and trade unionism. As a matter of fact the great moral lessons taught by the founder of the Christian church find tangible expression in the principles and practices of the wisely governed modern labor organization.

"It is a regrettable fact that large numbers of workingmen have disconnected themselves from the churches. This action, however, is not a protest against religion itself, but is attributable to an impression that there is on the part of many churches an absence of sympathy with the ideals of the working people and with the movement through which they are striving to ameliorate the conditions under which men live and work."

Mr. Mitchell spent some time in the defense of trade unionism and said that its existence had been justified by what it had done to ameliorate the condition of hundreds of thousands of men and women. Trade unionism, he declared, had thrown moral and industrial protection around women and children who had been drawn into the industrial vortex.

Pausing a moment, as if to weigh carefully his words, the labor chieftain thus impaled child labor:

"It seems almost an absurdity, a reflection upon our intelligence, that women and children are compelled to work while strong men chafe in idleness. Thousands and thousands of men who tramp about the country and live off society instead of living for it are producers of a system of unregulated child labor.

"Trade unionism has battled against this awful wrong. It has elevated the standard of living of the American workman and obtained for him higher wages and more leisure. Trade unionism has increased efficiency, diminished accidents, averted disease, kept the children at school, raised the moral tone of the factory, and improved the relations between employer and employed."

It is the belief of Mr. Mitchell, he said, that in the not distant future the church will come into thorough sympathy with the ideals and philosophy of the American workingman, that ministers of the gospel will be proud to proclaim their fealty to his cause.

Soft coal, better than lignite, has been found at Fargo, N. D., 160 feet below the surface. The area of the deposit has not yet been determined.

ILLINOIS OPERATORS' CAMPAIGN OF EDUCATION

The Illinois Coal Operators' Association has done in the past year a great deal to educate the general public in the matters which are of vital interest to the coal mining industry of Illinois, and have undoubtedly accomplished much in the way of securing a hearing from the general public. Among the useful educational efforts may be mentioned the technical investigation which resulted in the issuance of the pamphlet containing instructions for burning Illinois coal economically and without excessive smoke; the establishment of the joint powder commission composed of operators and miners; the circulation of several printed addresses by G. W. Traer on the conservation of natural resources and the solution of problems confronting the coal-mining industry; and particularly the circulation of two recent pamphlets prepared by the association. One of these is the report of two electrical and mechanical engineers on the Rawson Shot Firing System, showing its present dangers and shortcomings. The other is an elaborate presentation of comparative statistics concerning the increase of powder accidents in the coal mines of Illinois, the figures being taken from the official reports published by the State Bureau of Labor Statistics from 1888 to date, and from similar publications from other states.

The operators do not oppose any form of legislation that actually aids in making safer conditions for the miner. Their attitude has frequently been stated in FUEL, most recently in reference in its columns to the latest pamphlets referred to. This attitude is further indicated by a circular letter sent out under date of April 28th, accompanied by the pamphlet on Powder Accidents, and which reads as follows:

It is rather generally believed that coal mining is the most dangerous industrial occupation in Illinois. This is not true; but coal mining is a dangerous occupation, and has been made much more so during recent years by the practices of the coal diggers themselves, carried on in defiance of the statutes of the state and the wishes of their employers.

The coal miners now have in Springfield a representation working aggressively for the enactment of laws which the mine owners claim will make the situation worse instead of better.

The miners demand, first, that all applicants for the right to dig coal in Illinois coal mines must be examined as to their qualifications and receive a certificate of competency from a board composed only of miners who now are and have been for some years past digging coal in Illinois.

Second, they also demand that there be imposed upon the coal operators in Illinois a requirement that all blasting shots shall be fired by some hitherto unknown and undiscovered practicable mechanical or electric device.

Please read and digest carefully the facts and comments set forth in the enclosed pamphlet. This is a matter in which ever voter and humane person is interested. We believe you will be convinced that the increasing danger to coal miners from explosives has been brought about through their own wrongful conduct; and that instead of attempting to require some untried method, the result of which will be at best merely to shift the danger from the present shot-

firers to the men who will be obliged to go into exploded mines to put out fires and recover the property and will encourage the men who now commit the wrong to continue and intensify it, it would be better to go to the root of the trouble and find some method to compel the safe and proper mining of coal in Illinois.

Please notice carefully also the appalling results during past years arising out of the work of the men who now demand the exclusive right to certify whether other men are qualified to dig coal in Illinois. Is it reasonable to expect that men who have produced such results as are disclosed in this pamphlet ever will bring about in Illinois any better conditions in coal mining than they have produced themselves, unless some way is found to compel them to change their methods of doing the work.

A resolution has been introduced in the House of Representatives providing for the creation of a Mining Investigating Commission, to report to the next General Assembly. The mine owners are willing to submit their case before such commission and it is respectfully urged that you use such influence as you may have with legislators to bring this about and to defeat misguided and vicious legislation.

Yours truly,

THE ILLINOIS COAL OPERATORS' ASSOCIATION,
By A. J. Moorshead, President,
G. W. Traer, Chairman,
Legislative Committee.

No further action was taken by either house of the General Assembly last week, both houses adjourning Thursday until Tuesday of the present week. Neither of the committees on mines and mining held a hearing on any of the pending measures during the week. Committees representing the operators and the coal miners were in Springfield every day while the General Assembly was in session.

NEW RETAIL ASSOCIATION IN MICHIGAN.

The retail coal dealers of the Thumb district of Michigan held a meeting in Saginaw recently to organize. This is the second meeting of these dealers that has been held here during the past month, there being about 12 present representing the leading retail coal dealers of the Thumb district. The purpose of the convention was the organization of an association of retail coal dealers. There is at the present time a state association to which the majority of coal dealers belong, but so far there is none in the Thumb district, and this was the purpose of the meeting. A committee of four was appointed to look after details of arranging for another meeting to be held soon, at which the formal launching of the association will be made. Those on the committee are Jos. Frutchy, Cass City; J. Wallace, Port Austin; J. McAllister, Caro, and Chas. Aymer, of Fairgrove. Secretary Harris, of the state association, was also present and gave the members pointers on the benefits of a local district association.

SOME PREHISTORIC MINER'S LOST PIPE?

Bert Nichols has a curiosity in his office at Pittsburg, Kan., that has been attracting considerable attention for several days. It is apparently a fossilized pipe with the case open and the formation is of a cross between slate and coal. It was found twenty-four feet under the ground by workmen in the Nichols mine north of the city, and the wonder is how it got there.

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Goodby, Proud World.

RALPH WALDO EMERSON.

Goodbye, proud world. I'm going home.
Thou art not my friend, and I'm not thine.
Long through thy weary crowds I roam.
A river ark on the ocean brine,
Long I've been tossed like the driven foam
But now, proud world, I'm going home.

Goodby to Flattery's fawning face,
To Grandeur with his wise grimace,
To upstart Wealth's averted eye,
To supple Office, low and high;
To crowded halls, to court and street;
To frozen hearts and hasting feet,
To those who go and those who come.
Goodby, proud world! I'm going home.

I'm going to my own hearthstone,
Bosomed in yon green hills alone—
A secret nook in a pleasant land,
Whose groves the frolic fairies planned,
Where arches green the livelong day
Echo the blackbird's roundelay
And vulgar feet have never trod,
A spot that is sacred to thought and God.

Oh, when I am safe in my sylvan home
I tread on the pride of Greece and Rome,
And when I am stretched beneath the pines
Where the evening star so holy shines
I laugh at the lore and the pride of man,
At the sophist schools and the learned clan;
For what are they all in their high conceit
When man in the bush with God may meet?

BETTER MINING IS NEEDED.

John Mitchell in his Murphysboro address said some very pointed and suggestive things to the union labor men that made up so much of his audience, especially in calling attention to the real meaning that better wages, shorter hours and improved conditions should have for them and for their families. If these things, he said, did not add to the comfort and happiness of their families and to their own higher enjoyment of life, then he thought shorter hours, higher wages and better conditions not a blessing, but an evil. Mr. Mitchell also spoke, though not so fully as we could wish, on the necessity of union workmen making themselves the best workmen and thus demonstrating ethically the advantage of unionism.

If the union labor movement is to progress, to grow into secure permanence, then it must be through a higher power than strength of numbers and the power of mere force. You may silence a man with a club, but you cannot always thus convince him. The employer who yields to sheer necessity will always be casting about in his mind for means of successful future resistance; convince him that the labor union is best for him because it gives him better work, because it insures steadier operation of his plant, because it gives a higher excellence to his product, and you have convinced him through the most potent arguments that you can bring to bear—and you have increased his earnings, "Needs must when the devil drives," but escape from the unwilling service is sometime possible. The wise union labor organization is that which furnishes the best service for the best pay, and which requires of each man the best that is in him. The International Typographical Union is a forcible example of the wisdom of this course. There is no maximum to what a man may do in his hours of employment, but he is encouraged to do his best, and if he exceeds the average requirement he may earn as much as he can. It is not so in many other organizations, the coal miners of Illinois notably repressing all extra exertion by holding in disfavor the man or men who produce more coal in their eight hours of work than the average miner cares to produce. Instead of encouraging the poorer or less shifty workmen to strive for the earning capacity of the better miners, the tendency of custom at the mines, and the effort in all legislation sought, is to hold all to the average level and to discourage exceptional industry. The need expressed by John Mitchell that coal mining must again be made a trade will never be met under existing conditions. The less capable and industrious must be elevated; the repression of the more capable and industrious must cease, and this must be done not only by the union as a union but by imbuing the individual members of the union with this idea as well.

Legislation sought by the miners of Illinois is mainly wrong in that it tends to this universal depressing of its labor to a common level—the level of mediocrity. The men who have risen in the union ranks have not risen through this principle, but rather in spite of it, and yet they are leading in degrading rather than upbuilding the standard of work which the union man should reach. Thoughtful men are studying the problems connected with coal mining in the

effort to make it actually safer for the miner, and their experience is surely worth more than that of the average miner. Whenever a session of the General Assembly is at hand the miners have their legislative committee present but these gentlemen do not always proceed in the light of knowledge. If they did there would not be the active opposition that is now manifested towards all amendments to the mining law introduced by the state mine inspectors. So bitter did the opposition to these measures become on the part of the miners' legislative committee and so misrepresentative were the circular letters sent out by them that the mine inspectors united in a card addressed to the miners of the state justifying their position.

These bills are not in all things what the coal operators would choose, though in a general way they concede that the inspectors are on the right track and that they are conscientiously trying to improve conditions. But because these bills do not reflect the radical wishes of the legislative committee sent to Springfield or at least in Springfield nominally in the interest of the coal miners, the measures and the men who drafted them are viciously attacked. To FUEL the measures seem to be mainly drawn in the real interest of the miners themselves, rather than in compliance with the wishes of the mine owners, and the only conceivable reason for opposition by the miners' committee is that it wants the credit attaching to any mining legislation that gets through the present session. The operators themselves are taking no decided stand on the measures.

It seems unaccountable to FUEL that these representatives of the miners should attempt to justify opposition to Senate Bill No. 184, for instance, which seeks to prohibit the use of "dummies" in tamping holes and to define the term "dead hole." Wide experience has taught the inspectors that the use of anything but clay in tamping holes is an error, and that a large number of explosions can be traced directly to this practice of tamping. The composition of dummies is of itself combustible, which is an element of danger, and every good miner knows that holes cannot be properly tamped with such material.

As to the dead hole, the courts have often complained that the law does not define the term. A penalty is fixed to the drilling of a dead hole, but what constitutes a dead hole is not set out in the law, and in every case involving a violation there is contradictory evidence on the subject, which puzzles the court. The term should be distinctly defined by the law, and such definition is clearly in the interest of the men who fire the shots and for the protection of their lives. What reasonable objection can be brought against it, FUEL cannot see. A good miner now knows better than to drill such a hole; surely the ungood miner should be restrained by the law from doing a thing which endangers the lives of other men. The prohibition of firing more than four shots at one time in a room and the prohibition of shooting from the solid in a room less than twelve feet wide are surely in the interests of safe mining, as is the requirement that no drill hole shall exceed two inches in diameter at the toe. The only conceivable ground of objection is that it makes more expense to the miners, but the

operators would be forced to pay for the extra work. It is fast coming to be the belief that all solid shooting in narrow rooms should be stopped, and the miners are the only ones who fail to realize this. But instead they seem willing to take any sort of chances to save themselves either work or expense.

Laws for the prevention of accident and the saving of human life meet with more opposition from the miners than from any other source. Laws the effect of which would be to make the miner a better workman and in the end to increase his earning capacity meet with their most pronounced opposition from the miner himself. The effort seems to be to simply lessen the work and increase the pay without regard to the betterment of conditions permanently and educating a higher class of workers. If the union is to endure this must be changed, or the movement will fail as others have failed, and its failure will be due to the men who will not see the right.

A SCHOOL OF MINING.

The bill now pending in the General Assembly of Illinois, relating to the establishment of a school of mines at the state university, should receive the consideration and support of every patriotic member of the General Assembly, and the endorsement of every thoughtful citizen. The waste of our natural resources in the past has been because of the belief long and loudly proclaimed that they were "inexhaustible." Recent years have brought about a realization of the folly of this belief and approaching exhaustion of some of the necessities of the human race has awakened an enlightened interest. It is no longer admissible to mine the coal easily reached and close the mine leaving vast supplies untouched. But the problem of mining the remainder of the coal has not yet been solved. Already the coal measures most easy of access are growing limited in extent and have been practically all located. It has become necessary to mine deeper and more thoroughly, and how to do this must be the problem for experts. Not only coal, but other minerals must be studied and means for conserving instead of wastefully mining them must be found and taught. Ordinary training in engineering is not sufficient; there must be systematic and constant effort to solve these questions, and effort must be directed by an institution under guidance of government, state or national, or both.

The good work heretofore done in many branches of engineering and the high rank taken by the state university in these lines of study and research justify the full confidence of the people of the state of Illinois that if this duty be entrusted to them it will be well performed. A rank such as is held by the University of Illinois can only be gained by achievement. The vast mining wealth of the state is but partially realized as yet, and it is of the utmost importance that these natural treasures be conservatively mined for the good of the present as well as of the future generations. Mineral wealth cannot be replaced when once exhausted; let us, then, find the best and most approved methods of conservation before any more of it is wasted.

Mr. and Mrs. E. T. Bent have returned from their wedding journey and are now at their home on Indiana avenue.

THE CHEMISTRY OF MINE GASES

In a lecture on "The Chemistry of Mine Gases," W. W. Tunnicliffe, an English expert, recently declared that nothing is simpler than to get at the density of a gas, as each had a definite weight, and the density is always half the molecular weight. All coal, no matter of what nature, would have some quantity of firedamp in it. They sometimes met with it in cracks and crevices, and when these were cut into it issued forth as a "blower." The greater proportion, however, was contained in the pores of the coal, and was always a coal product pure and simple. It had neither color nor smell, although occasionally natural marsh gas had apparently a peculiar odor, but this was due to the presence of other hydrocarbons, or perhaps sulphuretted hydrogen.

Mr. Tunnicliffe said that in testing for firedamp they should not snatch the lamp away rapidly. The maximum explosion would always take place when they had got 9.38 per cent of firedamp and about 18 per cent of oxygen (one-fifth of the remaining air). Below a percentage of 6 of firedamp they did not get an explosion unless there was something else present—dust. In a very deep mine and a high atmospheric pressure they got an explosive mixture with less firedamp than was usually considered explosive. Even 2 per cent of firedamp in a deep mine in the presence of dust from gassy coal might originate an explosion.

The recognition of the part played by dust in explosions rendered it desirable that regular determinations of the amount of dust in the air of a mine should be frequently made. Putting aside for a minute the cause or origin, it was obvious that the production of heat, either by a blown-out shot or a small explosion of firedamp, distilled inflammable gases from the dust floating about. With the adjacent air those gases formed explosive mixtures, which ignited at the flame: more heat was produced, more gases were distilled from adjacent masses of air, those took fire, and the disastrous results radiated from the focus of the explosion entirely owing to the dust present in the air of the mine. More recent experiments by Mr. Garforth had shown that dust alone, in the absence of firedamp, could produce explosions of disastrous magnitude, and experiments on a large scale be made on some of the obscure points that were as yet not elucidated, such as:

1. The influence of varying amounts of dust.
2. The amount necessary to carry on an explosion.
3. The influence of impurities, such as stone dust, on the inflammability of coal dust.
4. The length of a dust-free space necessary to break the blast and localize it to the district of its origin.

Carbon monoxide or whitedamp was always caused by underground fires. It showed that there was heating somewhere, and was always accompanied by stink-damp, which they met with in gobs. It was also produced by the heating of coal or shale in a gob, and analyses of mine air showing more than .02 of carbonic oxide (carbon monoxide) were certain indications that heating was going on somewhere. In certain cases, however, it had been proved that it was given off by coal without any heating whatever.

The readiness of the gas to combine with haemoglobin was 300 times that of oxygen. If haemoglobin had combined with whitedamp it could not combine with oxygen, and hence death speedily ensued if the air breathed contained enough of the gas. There must be no more than 5 pints present in 10,000 units of air, even then alarming symptoms sometimes ensued on extra exertion. It was the worst gas they had to fear, and neither the lamp nor their

lenses would give them definite indications of it. Often the power of judgment was enfeebled before the man was aware that anything was wrong.

A mouse could be used to detect the presence of carbon monoxide, even in small quantities. It should be left for a quarter of an hour at the place where the air had to be tested, the investigator meanwhile going away. The mouse should then be killed at the spot, and by examining its blood above ground (in daylight) the percentage of carbon monoxide in the air could be ascertained with some approach to accuracy. Then one should prick one's finger, and make a dilute solution of normal blood in two test-tubes of equal diameter. The solution should be of such a strength that the liquid has a yellowish tinge. The solution of the test-tubes was now shaken with coal gas till the haemoglobin was saturated with carbon monoxide and the color changed to pink. In another test-tube of the same diameter was placed a solution of the mouse's blood, and this solution was diluted carefully till its depth of tint was the same as that of the other solutions. Ordinary blood color was of distinctly yellow tint, but a blood solution saturated with carbon monoxide was a full pink color. If carbon monoxide was present in the air breathed by the mouse the solution would be intermediate in color between yellow and pink. From the color the percentage in the air might be roughly estimated. The blood of the mouse was half saturated with .08 per cent of CO, one-third saturated with .04 per cent, one-fifth with .02 per cent, two-thirds with .16 per cent. The tints should be compared by holding up the test-tubes against the light from the sky, and they should be changed from side to side during the comparison. If the test could not be done in daylight blue spectacles should be worn in artificial light. If a mouse was not available, they should take a sample of suspected air in a bottle that was thoroughly clean, open the bottle under the blood solution, allow a few cubic centimeters of the air to bubble out and the blood solution to bubble in, and shake continuously for 10 minutes; then pour the solution from the bottle into a test-tube and hold up to the light.

Decomposing organic substances containing sulphur gave off sulphuretted hydrogen, which was best known to the miner as stink-damp. In small quantities it betrayed its presence by its odor of rotten eggs, but it was in some respects a friend to the miner, as it often gave warning of the outbreak of a gob fire, and it was further an indication that the coal was heating. Breathed in large quantities, it deadened the sense of smell first, and rapidly produced unconsciousness.

Very small quantities would cause irritation of the eyes and air passages, the eyes feeling as though dust was in them. Giddiness and vomiting would be caused by .05 per cent, and .2 per cent would kill a dog or cat in 1½ minutes.

Nitrous fumes were caused in mines by various explosives containing nitro-glycerine or nitro-cellulose burning quietly instead of detonating. One's nose was a good indication. If the fumes were detected they ought not to return to the place after a shot had been blown, as very small percentages were dangerous. Though they felt no immediate harm, the after effects were nearly always bronchitis.

The Mexican Government has raised the duty on imported coal one dollar a ton in order to further protect the local producers. The railroad commission recommended the change.

THE FUEL RESOURCES OF OUR COUNTRY

An Address Delivered Before the Illinois Fuel Conference at the University of Illinois, Urbana, Ill., March 13, 1909,
by GEORGE OTIS SMITH, Director U. S. Geological Survey.

By law, the federal Geological Survey is charged with the classification of the public lands and the examination of the geologic structure, mineral resources and products of the national domain. Thirty years ago, Congress thus defined the scope of this branch of the public service, recognizing by the wording of the statute, the practical relationship between geology and the mineral industry. Today the Geological Survey is making contributions to the nation's knowledge of its mineral fuel resources along four lines—land classification, mining geology, mining technology and mineral statistics.

In one line, that of classifying the mineral lands, that of classifying the mineral lands whose title remains in the national government, the federal bureau has an undivided jurisdiction; in the other phases of the investigation of mineral fuels, we share the field in common with the state surveys and the great research schools. This conference is especially significant in that it has been inspired by the spirit of co-operation. It therefore well expresses the extent to which these three agencies are working together in the service of the mining industry and indeed for the benefit of the whole industrial life of the nation.

The Story of the Survey.

In 1879, Congress expressed its appreciation of the importance of the nation's mineral wealth by establishing this scientific bureau charged with the investigation of these mineral resources. Now, three decades later, the mining industry is making an annual contribution to the nation sixfold greater than it was then. I shall refer later to some phases of this phenomenal 30 years' development, but first a few words as to the part the United States Geological Survey has had in recording and promoting that development, that you may judge whether this bureau is, like your state survey and university, in any sense keeping place with the marvelous expansion in the production of mineral fuels and notable progress in their economical utilization.

In the first few years of its history, the survey has an annual appropriation of between \$100,000 and \$200,000, very small portions of which appropriations were devoted to the subject of the nation's fuel resources. This year, out of an appropriation of a million and a half, more than one-third, or at least \$600,000, has been expended in explorations and investigations relating solely to the mineral fuels. This work is both geologic and technologic.

Of the technologic investigations I need say little, as you have been able to learn their nature and to judge their value at first hand from Professor Holmes, the chief of the technologic branch, and his associates, Messrs. Rice, Randall and Williams. I would not care, however, to allow this opportunity to pass without mention of the spirit of enthusiastic endeavor that has characterized those who have been engaged in these past few years in beginning this new line of federal work.

As I stated a moment ago, these technologic problems have been and are shared with other organizations, whose members are equally enthusiastic and no less well qualified to master the problems. Yet from my observations I am convinced that the entrance of a federal bureau into the technologic field has given an impetus to the movement to secure less wasteful practices at both mine and power plant, that no other single agency could have contributed. In

making this statement I am not unmindful of the invaluable assistance received from Professors Breckenridge, Goss and Lord and several others connected with colleges or universities, for it is such co-operation that has made possible whatever success has already been attained.

Value of Technologic Contributors.

In view of the increasing dependence of our industrial nation upon its mineral fuels, I am inclined to take a high value upon the technologic contributors of the United States Geological Survey. As you know, attention has been given not only to the waste in mining, but more especially to the much greater loss in utilization, and now to this experimental work has been added the beginning of an adequate investigation of mine accidents, a line of practical research that is expected to decrease in some degree the present excessive loss of life in the mines. It augurs well for the success of the mine accident and mine rescue work of the survey—work barely begun—that so large a part of this conference has been devoted to this humanitarian phase of our investigation.

In the geologic branch of the survey the federal geologists are engaged in mapping and measuring the nation's stores of coal, oil and gas, and exploring the public lands with the purpose of adding to the visible and known supply of these mineral fuels. Since the organization of the survey, its statisticians have been recording the ever increasing activity of the country's coal mines and oil and gas wells, with the result that last fall we were able to present to those interested in national conservation a fairly accurate inventory, from which I shall later select some of the quantitative data for graphic repetition.

The Land Classification Work.

The land classification work of the geological survey is its latest development, although the classification of the public lands was a function and duty specifically laid upon the bureau at the time of its establishment. For three years now an increasing amount of attention has been given to special surveys of the coal lands belonging to the government. The lands underlain by valuable deposits of coal have been segregated from the non-coal lands—the latter restored to agricultural industry and the former protected from any entry other than under the coal-land laws. In this movement to secure the proper utilization of the remaining public lands and their sale at prices somewhat proportionate to their value, the function of the geological survey is not only to determine and report to the G. L. O. the coal or non-coal character of the land, but also to place upon each legal subdivision—or 40 acres—of the coal land a selling price. In this valuation work, the accessibility of the coal field, the number, thickness and depth of the coal beds, and the quality of the coal are all factors considered in the determination of the coal values.

This classification of the public lands in the past three years has resulted in the field examination of about 35,000,000 acres—an area nearly equalling that of the whole state of Illinois.

This recent departure in survey explorations is a noteworthy example of geology applied to the public good. Yet, incidental to this purely economic work, important scientific results have been secured relative to the stratigraphy of the

Rocky Mountain province. Systematic surveys of the oil field are likewise yielding data, both economic and scientific, of equal importance; but with so great activity in the coal fields, the federal survey has been unable to keep abreast of the oil and gas developments in the different fields.

Field and Laboratory Work.

The field and laboratory work of the survey, the explorations and investigations, realize their full purpose only as the results are published. Publicity through the preparation, publication and distribution of reports is the measure of success, and the survey's contribution to the knowledge of the fuel resources of the country is indicated by the annual issue of not less than ten geologic reports on the subject and a total of fourteen technologic bulletins since 1904, when the fuel testing work was started at St. Louis. A gratifying feature of the publication side of the work is that a considerable proportion of these publications are already out of print, a fair index of public interest in the subject.

Returning now to the subject of our fuel resources, it may be well to consider the state of our present knowledge as to the extent and distribution of these supplies and of the tendencies of today in the production and consumption of the mineral fuels.

In 1901, the United States Geological Survey made its first attempt to compile an inventory of the nation's coal reserves. At that time the data scattered through technical journals and official reports were collected and a summary prepared of all available information. Dr. Hayes presented in a table the distribution of the coal fields and estimated of their extent. A comparison of this table of 1901 with the statement of Mr. Campbell of May, 1908, furnishes some idea of the amount of the survey's work on coal in the intervening seven years. The earlier inventory gave the area of coal bearing formations in the United States as 280,000 square miles of which only certain percentages, 35 to 75 per cent, were believed to be workable. The later figures are for workable coal fields with an estimated area of 327,000 square miles, with nearly one-half as much more of possibly workable coal and coals under heavy cover. The more notable differences between the two tables are in the Rocky Mountain States, where the survey has been engaged in land classification, where the later figures double or treble those of the earlier inventory. Again in the earlier summary, no attempt was made to estimate tonnage inasmuch as at that time data relating to number and thickness of workable beds were not available for large areas of the country; but in the 1908 statement Mr. Campbell estimates not only the available tonnage, but classifies the coal reserves by provinces, accessibility and grade of coal. The estimate has been criticized as too large for Pennsylvania, West Virginia, and Ohio, but it may be stated as probable that any overestimate in the eastern fields will be offset by underestimates in the Rocky Mountain field.

Production Statistics.

Turning now to production statistics, which in the case of coal, oil and gas, form the best possible test of industrial progress, a few notable changes since 1880 should be mentioned.

In a list, showing the present relative importance of the ten leading mineral products, the mineral fuels, coal, oil and gas, will be seen to rank first, fifth and ninth. Were we to compare this with the sequence of 1880, you would find that notwithstanding the six-fold increase in total value of mineral products, coal and petroleum have both maintained their positions, while natural gas is a newcomer in the list.

With this increased prominence of the mineral fuels, it has naturally followed in these 30 years that the non-metallic products have outshipped the metallic output, changing

from 47 per cent to 57 per cent of the total. In the popular mind, too little credit is given to these most useful non-metallic products and too much to the precious metals.

Petroleum and natural gas must be considered together with regard to their distribution. These are scattered over 22 states and aggregate nearly 9,000 square miles in six great fields. Eighteen states produced petroleum last year, and nineteen states natural gas.

The production statistics for petroleum for the past three decades are striking and show an eight-fold increase, which fact, as you will remember, has enabled this product to keep its place in the column of minerals notwithstanding the great advances. It will be noted also that the center of petroleum production has shown a westward trend. In 1900 the primacy in petroleum production passed from Ohio to California and later back to Oklahoma.

Speaking More Particularly of Coal.

Now that I come to speak more particularly of coal, I realize that I am in Illinois, a state standing near the front in both oil and coal production. I am not unmindful that as early as 1679, the Jesuit missionary, Father Hennepin, mentioned and mapped Illinois coal, and that today you rank second in both annual and total production and first among eastern states in coal reserves. But I can not refrain from bringing to your attention the fact that in only two foreign countries does the coal output exceed that of this state. In fact, you have two counties whose 1907 production exceeded that of Canada, or indeed, of any one of 23 of our own coal producing states.

This wealth in the two important fuels, together with the nearness to the Lake Superior iron ores, puts your state well to the front in industrial importance.

The abundant supplies of coal and iron in this country form the cornerstone of our national prosperity. It has been stated that a nation possessing both coal and iron is independently rich, and you well know that America's industrial supremacy among the nations of the world depends upon her unrivaled reserves of iron ore and especially of the mineral fuels.

It is not without significance, therefore, that coal of some grade is found in all but 14 states, and that 31 states and territories produced coal last year. The subject of coal production should not be passed over without mention of its phenomenal increase—a record that forms a true index of the nation's industrial growth. Only one curve can well be compared with this diagram showing the annual increase in coal output, and that is the increase in railroad mileage in the United States. The similarity is not only striking, but is expressive of the sensitiveness of both coal mining and railroad construction to general business conditions. The average annual increase figured from the production curve is something over 7 per cent. To show America's place as a world power, we have only to glance at the statistics of the world's production of coal. As far as known we lead the world in coal reserves as well as in present production. Nor can we look to China for coal, since when China becomes industrially awake, that great nation will furnish a home market for her own coal. Since the days of Von Richthoven's estimate of the coal resources of North China, that country has been looked upon as possessing a reserve upon which other nations may draw when the coal supply of Europe and America shall run low. Mr. Willis' recent estimate on the coal of North China puts the figures at 605,000,000,000 tons, with the qualifying statement that this may be 100,000,000,000 tons too much or too little. Such a reserve is fairly comparable with the total amount of coal in the Appalachian coal fields as estimated by Mr. Campbell. In short, the coal fields of Southern, Western and Northern China are sufficient for only the

future needs of the great civilization which the Chinese will surely develop.

This glance at the world's reserve of coal shows plainly that in the case of no mineral is there greater need to emphasize the folly of exportation of raw material. Let us keep our coal at home and with it manufacture whatever the world needs.

The relative size of the coal fields in the different states is indicated on this diagram. In this, however, there is no distinction as to grades of coal, and with the range that we know, this should not be lost sight of. This feature brought out on this copy of the map of the coal fields of the United States last year issued by the survey. On this map is also indicated the progress in the center of production of coal in

the two past decades in which, as you will remember, the production has nearly quadrupled. The center of the coal reserve of the nation is also indicated. These geographic features in the distribution of coal production and of coal reserves furnish the best illustration of how the distribution of mineral wealth must surely work out the line of national progress in material matters.

This review of our industrial development, a development so unprecedented as to lead us to doubt our ability to forecast the future with any degree of certainty, has little value, except as it convinces us of the need of increased effort to efficiently utilize the mineral resources of state and nation, and to discover new stores of those minerals that are essential to our prosperity.

COMPRESSED AIR vs. STEAM IN COAL MINING

At a recent meeting of the mining institute of the Eleventh Bituminous Mining District at Scottsdale, Pa., P. P. Glenn delivered an address on "What Advantage Has Compressed Air Over Steam in Mining Operations," and a general discussion followed. Mr. Glenn said in part:

"In opening the subject stated by the chairman for discussion this evening I believe that we should confine our remarks to coal mining operations and having that in my mind's view shall be along that line. The most expensive and difficult operation in the production of coal is the process of loosening its solid state and this is accomplished in three ways. First, by blasting it from the solid as is done in the Connellsville region. Second, by undercutting for blasting. Third, by shearing either in the center or on the rib, and shooting to the shearing. This method is used in many bituminous mines where there is a strong roof, and where the run of mine basis is used. There is of course some intermixing of those methods, as in some mines they both undercut and shear in order to protect a tender roof, and to get a large proportion of lump coal; for where the coal is both undercut and sheared on one rib it can be brought down with a very light charge of powder. In some cases no powder at all is used, and the coal wedged down after being undercut and sheared.

Machines for Cutting Coal.

"Many machines have been constructed to undercut and shear coal, and they are now so perfect as to meet the various requirements found in the different coal fields that it may safely be said that compressed air coal cutting machines will in the future do the greater part of coal getting. The most successful of these machines may be divided into two classes, those which act percussively and cut with a single large chisel, and those which cut with a series of steel teeth. The second class is subdivided into four classes, one of which may cut out a large cylinder of coal, and which is used almost exclusively for driving headings. One of those machines named, 'the Stanley header,' can cut out a cylinder of bituminous coal four feet in diameter and five feet in length in 15 minutes, and after making the necessary allowances for removals, a rate of advance equal to 75 feet per shift of 10 hours is accomplished. When it is necessary to drive wide entries, two machines may be worked, side by side, thus driving two parallel entries which nearly intersect each other. The thin pillar left between them can easily be cut with a pick. If the coal could be removed as quickly as the cutting is done, the machine could advance an entry 12 feet wide, 25 feet in 10 hours. As coal varies so much in hardness, and in the amount of impurities it contains, it is possible to give only an approximation of the cost

of driving entry with the Stanley header, which is about 25 cents per linear foot when a single cylinder four feet in diameter is cut out, operated by compressed air.

"Compressed air is much used as a motive power in place of steam for driving engines, pumping and ventilating purposes, also for undercutting machinery and drilling. The principle of an air compressor depends upon the fact that when any given volume of air is compressed in a certain ratio, the absolute pressure or tension of the air is increased in the same ratio in which the volume is decreased when the temperature remains the same. The compression of air, however, causes a rise of temperature in the air compressed, which increases the pressure in a greater ratio than that just given. In practice this increase of temperature is a detriment owing to the late cooling, and consequent loss of pressure in the transmission of the air to the point where it is to be used. Air compressors are designed therefore to maintain the temperature as nearly constant as possible during the compression.

"The power is applied to an engine in the use of compressed air, in the same manner as in the use of steam, steam engines are often operated as an air engine with but a slight arrangement of the valves. The advantages of compressed air over steam consists in the ease with which the power is transmitted to the working face. The losses due to the condensation of steam and the radiation of heat in a long pipe line are avoided where compressed air is used. In case of a break occurring in the pipe line there is no danger of scalding workmen or animals, and the air exhausted from the cylinders of the machines on the roads or at the working face is a benefit instead of being a hindrance, as is the case with exhaust steam. In the use of compressed air the power loss in transmission and compression can be retarded, wholly or in part, by re-heating the air.

Advantage of Haulage Motors.

"In mine haulage compressed air motors possess the advantage over steam locomotives in that they require no fire; do not contaminate the air of the mine by gases of combustion, or run any risk of igniting the mine gases. In haulage the required pressures are necessarily high, ranging from 500 to 1,000 pounds pressure gauge. In this work compound compressors are better adapted, because where air is compressed in two, three or four stages, a high pressure can be attained with a comparatively small range of temperature in the compressor cylinder, and the result is a greater saving of power.

"Drilling and cutting machines and pumps are generally operated under pressure ranging from 60 to 100 pounds per

square inch. Mine motors are designed for high pressure up to 150 pounds per square inch at the throttle, the tank pressure varying from 600 to 800 pounds, while a pipe-line pressure varying from 600 to 1,000 pounds per square inch is commonly used in main haulages. It is good practice to provide a pipe line of sufficient size to pass the required volume of air at a velocity varying from 20 to 50 feet per second, and not to exceed 50 feet per second for good results."

ILLINOIS AND WISCONSIN RETAIL COAL DEALERS

The fourteenth annual convention of the Illinois and Wisconsin Retail Coal Dealers' Association will be held in Chicago Tuesday and Wednesday, June 29th and 30th. The session of Wednesday will be held on the steamer Theodore Roosevelt, by which a trip will be made to Michigan City, Ind., and return.

Tuesday evening, April 20th, the members of the coal dealers' association of Janesville, Wis., held a banquet in the Myers Hotel to discuss the trade and for a social good time. As guests of honor at the dinner were: F. E. Lukens, secretary of the Illinois and Wisconsin Retail Coal Dealers' Association, and Delos Hull of Oak Park, Ill. Besides these were the following local men: F. A. Taylor of F. A. Taylor & Co., William Buggs, P. E. Neuses and P. Kavanagh of the Janesville Coal Company, H. L. Corley and P. A. Pederson of the Rock County Concrete Stone Company; W. J. Baker of the W. J. Baker Company, B. B. Baker of the People's Coal Company, W. H. H. Macloon, Herman Lichtfus, George Cullen of Cullen Bros., and William Menzies of the firm of Plowright & Menzies.

The following new members have been added to the association since last report:

Cooper & Graves Lumber Company, Trempealeau, Wis.
C. B. Reading, Kensington, Ill.
W. H. Hesser, West Pullman, Ill.
Gilmore, Thayer & Co., Rockford, Ill.
A. H. Marshall, Rockford, Ill.
Mitchell, Johnson & Co., Rockford, Ill.
Reitsch Bros., Rockford, Ill.
James A. Mathew, Round Grove, Ill.
Pogue Bros. Lumber Co., Paw Paw, Ill.
Doyon & Rayne Lumber Co., Whitewater, Wis.
Meyers & Shank, Pearl City, Ill.
Hunter, Rourke & Co., Ogden, Ill.
The Weeks Coal Co., Sterling, Ill.
Wm. Buggs, Janesville, Wis.
Janesville Coal Co., Janesville, Wis.
Herman Lichtfus, Janesville, Wis.
People's Coal Co., Janesville, Wis.
Plowright & Menzies, Janesville, Wis.
Rock County Concrete Stone Co., Janesville, Wis.
F. A. Taylor Co., Janesville, Wis.
Galesburg Fuel Co., Galesburg, Ill.
D. J. McMullin, Galesburg, Ill.
Galesburg Union Supply Co., Galesburg, Ill.
McGavoch Bros., Beloit, Wis.
Geo. F. Beedle, Beloit, Wis.
C. A. Simmonds, Mommene, Ill.
D. Stassen & Son, Peotone, Ill.
W. M. Turner, Chicago, Ill.
J. L. Smiley, Watseka, Ill.
J. W. Irish, Clinton Junction, Wis.
Lamont Coal Co., Rock Island, Ill.
J. Miller, Hortonville, Wis.

S. S. Lewis, Neponset, Ill.
W. N. Hicks, Stockton, Ill.
Weber & Thillmaney, Rogers Park, Ill.
W. N. Bartleson, Macomb, Ill.
Leonard B. Yeast, Macomb, Ill.
Adair & Son, Chicago Heights, Ill.
People's Coal Co., Chicago Heights, Ill.
Emery Bros., Galva, Ill.
F. L. Torrance, Abingdon, Ill.
Baldock & Clawson, Alden, Ill.
Union Grove Lumber Co., Union Grove, Wis.
Rock Island Lumber & Mfg. Co., Rock Island, Ill.
Speidel Bros., Brookfield, Ill.
T. J. Heald, Aledo, Ill.
J. G. Trowbridge, Green Valley, Ill.
D. J. Deasey, South Chicago, Ill.
F. D. Nellis, Cairo, Ill.
J. W. Kirkpatrick, Urbana, Ill.
North Shore Fuel & Supply Co., Glencoe, Ill.
North Shore Fuel & Supply Co., Highland Park, Ill.
North Shore Fuel & Supply Co., Lake Forest, Ill.
North Shore Fuel & Supply Co., Kenosha, Wis.
Geo. Van Voorst, Union Hill, Ill.
Central Fuel & Material Co., Burnside, Ill.
Prince & Madderom, Roseland, Ill.

COAL NEW YORK USES FOR GAS.

To provide for the illumination and for the heating and for the maintenance of its industries, New York City consumes in twelve months in the manufacture of gas enough coal to build a new set of pyramids in Egypt and to supply the entire transatlantic fleet that plies between its noble harbor and the foreign ports of the world, and then have enough left over to run the biggest steel plant in the United States.

The coal used in the manufacture of gas for all purposes in New York last year was 828,000 tons. Let this be packed into a compact mass, with no spaces for windows or other openings, and it would be 5,363 feet in height, occupying exactly the same ground space as the insurance company's mighty monument. Its weight would be 1,850,000,000 pounds. The highest point would not be visible to the naked eye, even if the observation were attempted from the summit of two Eiffel towers, one on top of the other. To travel from the surface of the earth to the summit would require by the modern elevator, running at top speed, longer than a passage by train over the East River Bridge and back again, or more than twice as long as a journey through the Hudson River tunnels to the Jersey shore and the return trip to the island of Manhattan.

Resolve this wonderful obelisk of black diamonds into the rough, broken lumps of coal with which we are familiar. Pile them into carts—the biggest you can find, say, four tons each—and fancy the procession of 207,000 vehicles, with 207,000 drivers! There you would have a population sufficient to constitute a big city.—*Gas Logic.*

LET A RIVER INTO THE MINE.

Owing to the danger, the Clear Spring Colliery Company at West Pittston, Pa., was shut down for an indefinite period on April 20th, and 600 men and boys were thrown out of work. The shutdown is due to the fact that the caving in of the Pittston vein permitted a large amount of water from the Susquehanna River to get into the mine. Officials who made an inspection could not go far, as the roof is loose, the workings are filled with water and the supporting pillars of coal are thin. There is also a great quantity of gas in the workings, and there is constant danger of an explosion, a flood or the falling in of the roof.

A NEW CONTROLLER FOR SMALL LOCOMOTIVES

Small electric locomotives involve in their control practically the same fundamental and essential requirements as do the larger locomotives, with only the differences due to

nections, also the reversing switch and contacts. Then the controller drum and contacts, magnetic blow-out coil and all other interior details are made accessible by simply swinging back the arc deflector on its hinges, as shown by Fig. 3. Thus all parts are easily reached, for cleaning, adjustment, repair or removal.

The arc deflector being hinged, its removal is rendered unnecessary, and there is no possibility that a careless motorman may neglect to replace it in closing the controller.

The fingers are drop forged copper. They are interchangeable, not only with the fingers in other and larger Goodman controller, but also with the fingers used in the three-way switch that is usually present as part of the operative equipment of Goodman gathering locomotives (with gathering reels and possibly two trolley poles) on which this small controller is used.

Contact tips are of rolled copper and are designed in such form as to be reversible, so that when one edge becomes roughened by the continued breaking of the circuit, the tip may be turned end for end, thus providing a new breaking surface.

Operative Features.

In service this controller brings the



Fig. 1. The Goodman small locomotive controller closed.

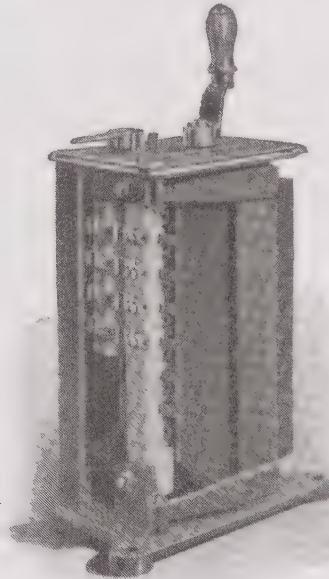


Fig. 2. The cover removed, showing reversing switch.

size, number of steps in cutting out resistance, etc. A controller for small locomotives, therefore, should be designed and constructed along the same lines as a larger one, and with equal attention to details of design and operation.

The very large business done by the Goodman Manufacturing Co. in production of gathering locomotives for all classes of service and all sorts of conditions, has brought about the development of a small controller of especially excellent design—compact, efficient, well built and with several features contributing to unusually great durability and reliability.

Gathering locomotives, while small in size and comparatively light in weight, necessarily must be arranged with special reference to quickness of handling, as required for rapid operation in their usual work, with its short hauls, frequent reverses and general switching character. Particular attention to this requirement, and others of similarly special nature in gathering locomotive service has been a characteristic of Goodman practice in equipment of this sort and is responsible for the development of the new controller.

Points in the Construction.

This new controller, designated as "L M 54," is a very compact design of a magnetic blow-out, drum type controller, with all the good qualities of the larger sizes and types. Its appearance, closed, is shown by Fig. 1. The cover is removable by taking out the two thumb screws seen in the illustration.

Removal of the cover, Fig. 2, exposes all the wiring con-

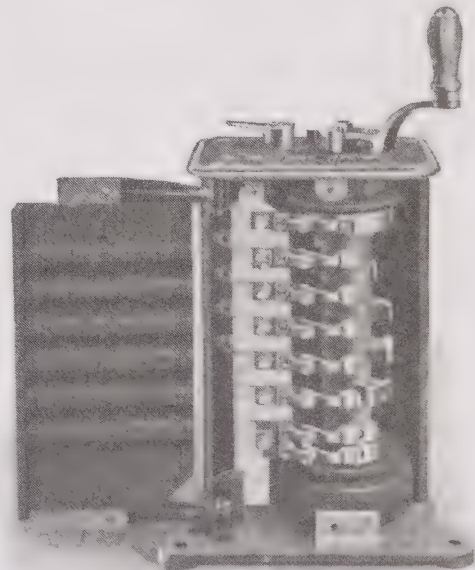


Fig. 3. Arc deflector swung away, exposing entire interior.

locomotive up to speed in six steps, giving very smooth starting conditions.

The reversing switch is cylindrical in type and is interlocked with the main drum of the controller. The reversing switch handle may be lifted off the stem by the motorman when the reversing cylinder stands in one particular position, and with the reversing switch in this mid-position the whole controller is locked, so that the locomotive cannot

be started until the reversing switch handle is replaced and the cylinder turned into forward or backward motion position. This construction makes it possible for the motorman to leave his locomotive in such condition that no unauthorized person can start or run it.

The controller case top and the operating handles are polished brass, and the controller as a whole presents a neat and well-finished appearance.

A CAMPAIGN IN BEHALF OF IOWA COAL

J. E. Trotter, of the Centerville Block Coal Company, Centerville, Iowa, has been elected secretary of the Iowa Commercial Coal Association, which was organized a little over a month ago to handle the commercial side of the Iowa coal industry. He will begin a systematic campaign to advertise Iowa coal and to convince the people of this state that native coal can be used where imported fuel is now consumed. He will also open up a fight against the railroads to prevent discrimination in distance tariff rates from points in Illinois.

Nine operators from every section of the state came to Des Moines and formed the Iowa Commercial Coal Association with the view of boosting Iowa coal. The mine owners declare that railroad discrimination resulted in much Illinois coal being used in the eastern parts of Iowa. In addition they say that some of the state institutions are burning Illinois fuel. To overcome these conditions is one of the objects of the new organization of coal operators.

"When I open the office of the secretary of the new Iowa Coal Producers' Association at Des Moines about May 1, I expect to apply myself at once to two important things," said Mr. Trotter a week ago. "First is the matter of freight rates, in which the Iowa operator has been getting the worst end of it. Then, is an advertising and educational campaign to make Iowa coal better known and more popular. I have already had experiments conducted that prove it is the most economical coal that can be used in, say, north-central Iowa, and that being the case, of course a wide range of territory would be available for the Iowa product." He will undertake to show that for one dollar the Iowa coal will produce more heat than any other coal costing one dollar. Mr. Trotter has handled the sales department of the Centerville Block Company for eleven years and knows the difficulties the producers must meet. He is very optimistic as to what can be accomplished.

A BLOW TO HOCKING VALLEY.

The Circuit Court of Franklin County, Ohio, has handed down a decree ousting the Hocking Valley Railroad from control, through the J. Pierpont Morgan syndicate, of the Zanesville and Western, Toledo and Ohio Central and Kanawha and Michigan railroads. The railroad was deprived also of its control of the Sunday Creek Coal Company, the Sunday Creek Company, the Continental Company and the Buckeye Coal and Railway Company. The decision is under the Ohio anti-trust law.

COLORADO'S GREATEST NATURAL WEALTH.

Colorado has long since earned the title of the greatest coal producing state west of the Mississippi river. Coal was discovered in various sections of the state in the late forties or early fifties, but not until 1873 was any effort made to mine it on anything like a commercial basis. In that year about 70,000 tons were mined within a short distance of Denver. Last year the total tonnage was approximately

10,000,000, and the industry is scattered over the entire state. The coal business of the state is practically in the hands of a dozen large mining companies, though individual companies operating a single mine are numerous. In all 190 mines were in operation in 1908. The United States Geological Survey estimates the net tonnage available in Colorado at approximately 34,000,000,000. At \$1 a ton, mine value, the supply is easily the greatest single measurable item of wealth in the state at this time.

DOUBLES IN VALUE IN FOUR YEARS.

Newton Newcomer of Merrittstown has sold a block of coal in Monongalia county, West Virginia, to James S. Amend and S. E. Frock of Uniontown. The tract comprises 495 acres and the sale price was \$42,075, or \$85 per acre. Mr. Newcomer acquired the coal within the past four years, paying an average price of \$40 per acre. He bought purely as an investment. The land is about four miles south of the Greene county line, near Wadestown, and is virgin coal. The vein is the Pittsburg and is deemed quite valuable.

CITY FUEL COMPANY'S MAY PRICES.

	Dealers Wagons in Yard.	Domestic Retail Delivered.
Hocking Valley Lump.....	\$4.00	\$5.00
Hocking Valley Nut.....	3.50	4.50
Brazil Block	3.50	4.50
Indiana Lump	3.00	4.00
Illinois Lump	3.00	4.00
Indiana Egg and Nut	3.00	4.00
Soft Coal Screenings	1.75	2.75
Carbon Spring—No. 1 Washed Nut	3.50	4.50
Carbon Spring—No. 2 Washed Nut	3.00	4.00
Carbon Spring—No. 3 Washed Nut	2.75	3.75
Indian Hill—Pocahontas Mine Run	3.40	4.50
Indian Hill—Pocahontas Lump and Egg	4.50	5.50
Gas House Coke	5.00	6.00
Smithing (George's Creek and Lilly)	4.50	5.25
Falling Rock Cannel	6.50	7.50
West Virginia Splint (Hand Picked)	4.00	5.00
Deep Valley—Large Egg	6.10	7.10
Deep Valley—Small Egg, Range, Chestnut	6.35	7.35
Deep Valley—No. 2 Chestnut.....	5.35	6.35
Deep Valley—Buckwheat	4.00	5.00
Sawed Slabs (per ton)	6.50	8.00
Maple Flooring (Hard Wood)	6.50	8.00

Additional 25 cents for coal carried in, or in bags.

Brazil Block Coal Company, Brazil, Ind.; capital, \$1,000,000; capital in Illinois, \$500,000.

OUR EVER INTERESTING ENGLISH LANGUAGE

Phrases From Shakespeare.

Shakespeare's influence over the public is shown by the extent to which his phrases have become incorporated into our language. Among these are "bag and baggage," "dead as a door nail," "hit or miss," "love is blind," "selling for a song," "wide world," "fast and loose," "unconsidered trifles," "westward ho," "familiarity breeds contempt," "patching up excuses," "misery makes strange bed-fellows," to boot" (in trade), "short and long of it," "comb your head with a three-legged stool," "dancing attendance," "getting even" (revenge), "birds of a feather," "that's flat," "Greek to me" (unintelligible), "packing a jury," "mother wit," "killed with kindness," "mum" (for silence), "ill wind that blows no good," "wild goose chase," "scarecrow," "luggage," "row of pins" (as a mark of value), "viva voce," "give and take," "sold" (in the way of a joke), "your cake is dough." The girl who playfully calls some youth a "milksoy" is also unconsciously quoting Shakespeare, and even "loggerhead" is of the same origin. "Extempore" is first found in Shakespeare, and so are "almanacs." Shakespeare is the first author that speaks of "the man in the moon," or mentions the potato, or uses the term "eyesore" for annoyance.

The Origin of Irish Brogue.

Let us see what this "brogue" is, writes Walter D'Alton in the Dublin Leader. We say that a person is a "threasure." Spenser uses the word; any one can find it in the "Faery Queene," Book II., Canto VII.—24. We hear it said of an obstinate man that he is a "contra'yry fella." "Contrary" is contra'yry" in Spenser ("Faery Queene," Book II., Canto II.—24), and "fella" for "fellow" is in Chaucer (Prolog, several places).

The Irishman who says he was "afered he'd be kilt" is a subject for mirth. "Afered" is in Spenser (same book, Canto III.—45); it is also used by Chaucer; and Chaucer also uses "kilt" and not "killed." Not often, but still sometimes we hear "nostrils" pronounced "nostrurles"; Chaucer has the latter in the Prolog. We speak of the "fitehele" for the fiddle or violin, and we have it also in the Prolog. When a man is upright we call him a "starling man," and Ben Johnson rhymes the word with "darling" in one of his plays ("The Fox").

We often heard, "he grutched me what I axed"; "grutched" for "grudged" is in Spenser's "Faery Queene," and "axed" for "asked" is Chaucerian ("Knights Tale," 489). Some twenty years ago in England the best educated and fashionable people took to dropping the final g of the present participle. They spoke of runnin', walkin', standin', thinkin', fightin', and so on.

Quite possibly in setting this fashion they knew that they were reviving a sound historic pronunciation. But it may be taken for granted they did not know that the Irish people had never lost it. "Hond," "lond," and "brond" for "hand," "land," and "brand" are frequent in both Spenser and Chaucer.

I know that "hoult," "boult," and "dure" for "hold," "bolt," and "door" are right, but I can not find the exact authority.

A Tipperary man says he is "agin" the "peelers," and Chaucer would quite understand "agin," though such a recent word as "peeler" would certainly bother him. We may cite one or two later and less classic authorities than Spenser. It is perfectly right to talk of "Dane" Swift, as

we have the authority of Swift himself for it. Everyone knows Cowper's lines:

"I am monarch of all I survey,
My right there is none to dispute,
From the center of all round to the 'say,'
I am lord of the fowl and the brute."

When Izaak Walton published his great work there is no doubt whatever it was pronounced in every sense, the "Complate" Angler. Complete is "complate" in Pope's "Essay on Man." In the same poem, "fault" is "faut." In what I have written, I had no intention of limiting my remarks to particular words. I rather wanted to indicate a whole system. "Complate," standing crystallized in the best accepted classical English, has plenty of its own company.

Here are a few: "Chate" (cheat), "bate" (beat), "tay" (tea), "concave" (conceive), and the rest. "Kilt" has numbers of words like it. With a little more competency and some leisure, any reader might make this vindication overwhelming.

The Letter H in England.

When the English language was evolved from the intricacies of many tongues and rolled and beaten into polyglot orthography of remarkable complexities all but one of the twenty-six letters of the alphabet were regarded as inanimate and therefore insensible of feeling as regards place or use. The single exception was the letter "H," and for this poor weakling of the alphabetical brotherhood the English people have always had a deep compassion. The spark of life that united the two uprights of this unfortunate letter was so feeble that a crossbar was added, serving as a sort of crutch.

The usefulness of "H" as a component of many words is, of course, recognized by the English, but it is such a poor, frail, little letter that it might sicken and die if used too often, hence its frequent omission from speech in the British Isles.

However, a little exercise is a good thing for confirmed invalids—even for the sickly "H"—and in the wisdom of their compassion the English people take "H" for pleasure trips among words which it has never seen in dictionaries. "Hammerican haccet" is one of its favorite journeys, and many words beginning with vowels have been visited by this tenderly nurtured letter.

Once I had lodgings in a northerly part of London—Tollington Park—and to get there I was forced to pick my way through a veritable maze of popular pitifulities for poor "H.". I would board a train in the Moorgate station of the Finsbury Park "tube" and note the deep feeling that the guards had for the names of the various stopping places.

The next tube station to Moorgate is "Hold" street (though printed as "Old"). "Hold" street is where you change if you wish to visit the "Haldersgate district." "Haldersgate" is, of course, the district referred to, but poor "H" must have its outing. Then comes "Hessex road" (Essex), which is the nearest station to the "Hagricultural All." The next is "Ighbury" and "Hislington," and there is where you are told to alight for "Hupper street and 'Olloway road." By this time poor "H" is so tired that he really must have a long nap, so when the Drayton Park station is reached the guard considerably sings out, "Change 'ere for 'Ighbury 'Ill an' 'Olloway!" Finsbury Park, the tube terminus, is next, and you are bidden to "change 'ere for Grite Northern trains." It so 'appens that I don't 'ave occasion

to patronize the "Grite Northern," so, on alighting at Finsbury Park, I 'ave walked through the catacomblike approaches of the tube until I 'ave reached the Seven Sisters 'rowd," there boarding a 'orse-drawn tram for 'Ornsey 'rowd." At 'Ornsey I take a bus and eventually reach Tollington Park.

The pity for "H" shown over this route is only an hex-ample, for all over the great fog-swept area one finds a similar feeling. Hammersmith is always called 'Ammer-smith by all persons of true feeling, and Holborn and its various parts are known as 'Olborn, 'lgh 'Olborn, 'Olborn Viaduct and 'Olborn Bars.

NEW COAL TRADE ENTERPRISES

Monarch Coal Company, Joliet, Ill.; name changed to Odell Coal Company.

Essex & Fritz Coal Company, Galesburg, name changed to Coal Creek Mining Company.

Roden Coal Co., Birmingham, Ala., will increase the capital stock from \$150,000 to \$300,000.

Bixler-Arthur Coal Co., Cleveland, O.; capital \$10,000. Incorporators: C. L. Arthur, and others.

Hocking Oil and Gas Company, Columbus, O.; capital \$100,000. N. L. C. Kachelmacher, president.

Kenmore Supply Company, Kenmore, O.; capital \$10,000. Incorporators: A. F. Hoffman, and others.

Cross Coal Co., Lawrence, Mass.; capital \$25,000. President, J. S. Cross; clerk and treasurer, J. W. Clay.

Independent Coal Company, Painesville, O.; capital, \$10,000. Incorporators: L. D. Dayton, and others.

Grandy Coal and Coke Company, Toledo, O.; capital \$10,000. Incorporators: James P. Stark, and others.

Star Coal Co., Freeburg, Ill.; capital \$8,000. Incorporators: P. J. Vogel, D. Archibald, Henry Schaffer.

Zipf Brothers Coal Co., Chicago, Ill.; capital \$100,000. Incorporators: Edw. Zipf, A. A. Zipf, F. J. Moulton.

Hood Coal Co., Seneca Falls, N. Y.; capital \$30,000. Incorporators: G. A. Hood, A. E. Hood, L. H. Hood.

Fairview Coal Co., Des Moines, Ia.; capital \$10,000. Incorporators: C. A. Beebe, W. O. Hopkins, B. F. Gilbert.

Schneible Company, Weehawken, N. J.; location in Illinois, Chicago; capital \$750,000; capital in Illinois, \$22,500.

Yates-Lehigh Coal Co., Buffalo, N. Y.; capital \$10,000. Incorporators: Harry Yates, Jno. B. Wells, C. H. Polley.

Independent Coal Company, Memphis, Tenn. Incorporators: W. W. Johnson, J. R. Menasco, C. C. Warren.

Crystal Ice & Coal Co., Plainfield, N. J.; capital \$100,000. Incorporators: F. Endress, C. Glockler, J. D. Loizeans.

Ohio Valley Mining Co., Chicago, Ill.; capital \$100,000. Incorporators: E. E. Kerr, G. C. Mastin, M. C. Putnam.

W. P. Rend Coal & Coke Company, West Va.; location in Illinois, Chicago; capital \$200,000; capital in Illinois, \$200,000.

Kettle River Mining Co., Spokane, Wash.; capital \$2,000,000. Incorporators: C. W. Scothron, W. L. Shearer, Wm. Brandenburg.

Farmers Grain & Coal Co., Saybrook, Ill.; capital \$10,000. Incorporators: E. M. Merritt, Jacob Froelich, D. Gilmore, Wm. Hunter.

J. L. Dibrell Coal & Coke Co., Portland, Ore.; capital \$1,000,000. President, C. E. Eaton; treasurer, T. L. Cretean; clerk, J. E. Manter.

Greenville Lumber and Fuel Company, Greenville, Wis.; capital \$1,500. Incorporators: W. A. Schreiter, M. M. Schreiter, and H. H. Schulze.

Consolidation Coal Company, Boston, Mass.; additional stock, \$6,150,000; total capital, \$16,400,000.

Acme Coal Company, Pittsburg, Ky.; capital, \$6,000. Incorporators: Alfred Feitcher, J. L. Caldwell and Renus Brown.

Junction Coal Company, Steubenville, Ky.; capital, \$12,500. Incorporators: E. J. Bickerstaff, J. A. Moore, G. K. Pearce.

Frankel Coal Company, Louisville, Ky.; capital \$5,000. Incorporators: A. P. Seligman, C. S. G. Seligman, Leon Frankel, Fred Moses.

Chicago Washed Coal Company, Chicago; capital, \$10,000. Incorporators: William T. Delihant, George W. Ford and Edward D. Pomeroy.

D. R. Davidson Coal and Coke Company, Morgantown, W. V.; capital \$1,000,000. The company has mines in West Virginia and Pennsylvania.

Kanawha Company, Hinton, W. V., capital \$10,000. Incorporators: W. T. Green, W. B. Scaggs, C. W. Ferrell, O. W. Allen and G. H. Humphreys.

Spruce River Coal Company, Massillon, O.; capital \$20,000. Incorporators: T. M. Taggart, F. F. Taggart, H. L. Taggart, Theo. Geltz, L. P. Shintz.

Tompkins Coal & Land Co., Columbus, O.; capital \$72,000. Incorporators: E. W. Tompkins, L. B. Tussing, D. H. Tobes, D. H. Thomas, S. D. Lilley.

La Americana Mining and Exploration Company, Neenah, Wis.; capital \$50,000. Incorporators: Charles Paepke, George M. Schmid, Louis Pingle.

Beaver Creek Fuel Co., Huntington, W. Va.; capital \$10,000. Incorporators: M. P. Wiseman, Paul W. Scott, E. E. Williams, H. J. Lovett, Mary A. Sims.

Wellington and Buck Company, Cambridge. Capital \$30,000. President, Ernest H. Wellington; treasurer and clerk, Eugene A. G. Burtner; John H. Colby.

Bewley-Darst Coal Company, Bristol, Tenn.; capital, \$125,000. Incorporators: Jake Bewley, Guy Darst, N. D. Bachman, John B. Baumgardner and B. B. Burns.

Midland Valley Coal Company, Midland, Ark.; capital \$25,000. W. J. Quinley, president; J. N. Spaadling, vice president; J. W. Dodd, secretary and treasurer; J. C. Peel.

Fire Creek Collieries Company, Chester, Pa.; capital \$150,000. Incorporators: P. M. Sharples, T. L. Eyes, Thomas S. Butler, Isabella Darlington and Rose Darlington.

Plainfield Supply Co., Plainfield, N. J.; capital \$300,000. Incorporators: P. J. McDonough, J. P. McDonough, C. McDonough, P. McDonough, A. H. Wilson, W. H. Titus.

Superior Fuel and Briquette Company, Salt Lake City; capital, \$250,000. J. H. Durkee, president; Gomer Thomas, vice-president; E. S. Fisher, secretary; W. S. McCormick, treasurer; N. W. Clayton, Jr., and W. M. O'Brien, additional directors.

IS COAL SMOKE A CURE FOR DISEASE?

COL. W. P. REND in the Chicago Inter-Ocean.

Those who heard the reply of Col. W. P. Rend to the argument against coal smoke, which was made at the recent Kokoal dinner, will no doubt wish to preserve that address as nearly as may be, and for this reason and for its inherent interest, FUEL reproduces from the Chicago Inter Ocean the article contributed by Col. Rend on the subject of his speech. This embodies Col. Rend's line of argument which was so much enjoyed at the Kokoal dinner. The article follows:

The smoke question of Chicago is becoming the burning question of the hour. It is a question of deep concern to the present and future business and sanitary interests of Chicago. In its public discussion the opinions and arguments put forth from day to day by smoke reformers in the columns of the daily press are mainly misleading and one sided, and rest upon no other basis than the unsound basis of plausible error.

In a recent assemblage of coal dealers I ventured to express dissent from some of the false doctrines and absurd sophistries promulgated by these smoke theorists. For daring to speak out my mind and tell the truth I am attacked from many quarters, both at home and abroad, as a penalty and punishment for my rashness. In certain eastern papers I am made to say, in sensational head lines, that nothing is so good for one's health as to breathe and eat smoke. I desire to plead my defense, to vindicate my views, and to prove in a logical and scientific way the benefits and blessings of carbon. It is easy to show, by statistics as well as by general and unerring experience, that the smoke of our city or of any city is not unsanitary, and that it is wholly innocent of the grave charges that it is killing off our people, and that it is the responsible cause of much of the tuberculosis and other diseases of the respiratory organs afflicting this community.

* * *

I will go still further and state that there is convincing evidence that soot, or carbon of smoke, emitted and poured into the atmosphere of our city works no injury, but is, if anything, an advantage and a benefit to public health. I will maintain that this so-called evil, in its comprehensive and broadest sense, is no evil at all, and that in its most important aspects it is both a public and private blessing. Do not laugh or scoff. Listen.

The evil, as it is termed, is mainly an evil of the imagination. We have reason to feel grateful and to thank heaven that Chicago smokes. If it did not smoke the most of us could not make a living. The songs sung and the stories spun from day to day in the public press maligning smoke are blacker and more dismal than the smoke itself.

Let us glance at what the enthusiasts of smoke abatement say. It is contended that "the smoke or carbon constantly being belched into the air, to its defilement and to the injury of the health and property of our city, is something vast and appalling." In support of the direful consequences of this so-called evil it is emphatically stated that "we hold firmly to authorities who tell us it is not good for our interiors, and we are sufficiently impressed by the blackened lungs, which are on exhibit in jars of alcohol in smoke suppression museums, to ask for no other visible evidence."

With all due respect and courtesy to the advocates of this lung and alcohol theory, I deny the evidence; it is no evidence at all. I admit that coal dust inhaled into the lungs discolors and stains this organ, as it discolors and stains our hands and face, but it is jumping at an unwarranted conclusion to say that it is any proof in this instance of disease. The proffered testimony, intended as a crushing argument, is unworthy of credence. The evidence of those who run smoke suppression museums generally rests on bias and prejudice. Some of these people seldom tell the truth. Anyway, in this case, the testimony is incompetent and worthless. There is a confessed alibi of the only true witnesses, the original owners of the lungs. They are in another world. Invisible witnesses do not furnish visible testimony. If these original owners were summoned back and put on the witness stand they would probably swear that they had stained and discolored these identical lungs by soaking them in alcohol long before they died.

Let us give some evidence that challenges contradiction. Coal miners work in an atmosphere filled with coal dust. Each one of them inhales more of the particles of coal every day than is inhaled in a month's time by the average person living in the smoky city of Chicago. If an autopsy were held on any of the dead bodies of coal miners their lungs would be shown, in almost every instance, to be blackened by the discoloration of carbon constantly inhaled in their occupation during life. But, wonderful to relate, coal miners who breathe this "poison" and whose lungs are blackened by it are among the healthiest of men.

* * *

The vital statistics, published by the United States government and running back for a long period of years, show that the mortality from tuberculosis and from throat diseases among coal miners is much lower than the average percentages of death from these diseases in nearly every other occupation. These national statistics on vitality can be seen and consulted in our public library. These statistics, and the authentic and valuable testimony that they afford, inform us that coal miners suffer less from consumption of the lungs and from diseases of the throat than farmers and farm laborers working and living in the pure country air, free from smoke and coal dust. Here is a paradox calling for explanation.

If the coal miners, who inhale such vast quantities of pulverized coal, are so healthy and free from tuberculosis, there must be a responsible and remedial cause for their immunity from the ravages of this terrible plague. We are irresistibly forced to the conclusion that this cause is none other than the sanitary effects of carbon taken into their lungs, which kills the bacilli of that dread disease and which filters and purifies the air inhaled in respiration. If those who sleep out in the open air at night were to go down to the coal mines and take the carbon cure they would be sure to obtain relief.

I know that some of the doctors will disagree with me, as they disagree with one another on almost every subject under the sun. Yet every prominent physician, skilled in the healing art, will agree in the axiom that carbon, in one form or another, is a most valuable sanitary agent. It is one of the very best disinfectants known to the science of medicine. Most of the practitioners of the profession administer as a

remedy for tuberculosis the oil of smoke known under the name of creosote. Carbon pills are given for stomach troubles. As is known by everyone, carbolic acid, which is a product of the distillation of coal, is one of the very best of germicides. Germs hostile and injurious to animal life as well as to vegetable life are effectively destroyed by the agency of carbon in one form or another. Putrid water is made pure and healthy when filtered through carbon. Clothing, infected with deadly germs of contagious disease, are cleansed and purified by smoke. Respirators invented by the great scientists, Pasteur and Tyndall, have carbon as their chief medium of purifying the germ-laden air passing through them. But why multiply proofs to demonstrate and illustrate the health producing and health preserving qualities of carbon.

The black soot, or carbon, escaping into the air and forming clouds above us serves to destroy myriads of floating germs that hover over our heads. The clouds of soot are simply vast filters through which the germ-laden air is strained of much of the poison and pollution of bacteria. The soot simply slaughters these pestilential germs that our doctors tell us, in the scientific and exact language of the profession, are "microscopic fungi, or schizomycetes of the achlorophyllous division of the schizosporae." For some time I have been digging into medical books and consulting authorities, and have gained much useful knowledge.

For argument's sake let us grant that smoke is injurious to health, and that it is a great sanitary evil. On this premise it would then appear that if we multiply the amount of smoke in our city we multiply disease, provided other conditions would remain the same. But our statistics show that the smokier the air of Chicago becomes, from the rapid increase in the number of factories and of our other industries using coal, the healthier we are.

* * *

The health department of Chicago will perhaps say that smoke, shutting out the rays of the sun, does much serious harm. This argument must be taken with caution. It is a groundless alarm in its application to smoke. We all know, of course, that we cannot live without sunlight. It is not necessary, however, that we have perpetual sunshine. The great Creator did not so intend. The sun does not shine at night, nor does it shine on rainy days, and yet we are all alive. The beams of the sun are denied man fully half of his time here below. But, after all, the floating carbon aids the sun's rays in germ destruction.

It is a significant fact that smoky cities of this country, and of other countries, are among the healthiest of all cities. Pittsburg, covered by a perpetual pall of smoke, is classed as one of the healthiest cities in the world. I remember, when a boy, that during an epidemic of cholera, physicians ordered coal fires built in the public streets to destroy the virus of this disease and for the purification of the air poisoned by pestilence.

It is true that the inhalation of coal dust may cause some little irritation of the throat, but this is a trifling matter compared with the sanitary benefits otherwise obtained. But still it is proclaimed that combustion of coal united with carbon is poisonous and deadly. This charge is not true, in its intended sense. It is well known that gases emanating from the combustion of anthracite coal, which is quite free from soot, are more noxious and harmful than the gases emanating from the combustion of soft coal. The fumes of hard coal taken into the lungs are frequently the cause of death, but, as a matter of fact, very few people inhale the gases that escape from smoking chimneys. These gases are so light that they shoot up in the air with the velocity of a bullet discharged from a gun. Therefore the gas argument should be wholly eliminated from the discussion of the sanitary or insanitary effects of soft coal smoke. The offending

element, which causes the chief outcry, is simply soot, which is mainly carbon.

The soot, containing fine particles of coal, may, as I have already stated, cause some little irritation in the throat, but it should be remembered that dust blown from the public streets causes as much, and even more, irritation, and is an agency of introducing into the system microbes of diseases, as this dust is often impregnated with poisonous germs that do most serious harm. This injury, however, is in part counteracted by the germ destroying influence of pure carbon. Certain scoffers, of course, and the prejudiced and incredulous smoke reformers, will probably repudiate these scientific theories. But reasoning this subject either by the processes of deduction or induction, we reach the same sound conclusion, that carbon is good for us when taken in proper doses.

* * *

Now, let not this logic be met by ridicule, by lampoons, by cartoons, or by abuse—the last resorts of weak causes—but by the fair and legitimate methods of correct reasoning, such as I here employ. There is no truer science than that science founded on the facts of man's experience. This inductive science totally disproves all the speculations and false theories that some of our well meaning but misguided philanthropists who pose as authorities on this subject, and who in their accusations are charging that smoke is appalling in poisoning our atmosphere and imperiling the general health of the people. It is about time for these men to cool off, and to keep cool, and stop all this needless clamor and these false alarms. Our health department proclaims in its many reports that Chicago is one of the healthiest large cities on the face of the earth. Why then this alarm and this foolish fear?

Now, let us take a glance at the effects of smoke on the valuation of property, and consider whether, on economic grounds, it deserves the anathemas hurled against it. Chicago has become a great manufacturing center. It is a vast workshop, fabricating articles of use and comfort for home requirements and for shipment abroad. From a commercial city of fifty years ago it has taken rank as one of the largest cities, both in the volume and value of its manufactures. This manufacturing growth has brought with it a corresponding increase in both population and wealth. To many causes are due the credit for these gratifying and wonderful results.

None of these causes has contributed so much in value or in influence as the abundance and cheapness of our Illi-

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nois coal. England, as everyone knows, has been for centuries the great workshop of Europe by reason of its abundance of cheap fuel. Its great manufacturing industries rest upon this foundation. But Chicago has cheaper fuel than any city in England. Our cheap Illinois coal is supplied to our mills and factories at a less price than coal can be bought at any colliery in Great Britain. This great advantage and this blessing of nature have attracted here capital that is invested in rolling mills, factories and other industrial plants. If the smoke reformers will not drive them away, fresh capital in huge volume will seek further investment in Chicago and in its environments. We will soon have a continuous chain of factories and rolling mills filling up all the intervening space now lying between the city proper and the town of Gary. Steel and iron can probably be made cheaper here than in Pittsburg. Is it wise then to make war upon these great industries by hostile efforts to compel compliance with unreasonable smoke ordinances?

* * *

A former chief inspector of smoke told me on one occasion not long ago that if the smoke ordinance were fully enforced it would close down nine out of ten factories in Chicago. Our factories, that owe their establishment and their growth mainly to the use of cheap Illinois coal, have increased the general value of our property to a fabulous degree. The small incidental loss from smoke that increases our laundry bills and that stains with soot some of our property, is quite insignificant when compared with the enormous gain in values created by our factories and other smoking industries.

This economic charge of the general indictment against smoke is largely the charge of gross exaggeration. Of course the manufacturers and pretty much everyone else agree that the volume of smoke shall be kept within limits consistent with reasonable demands and just expectations.

The owners of the 17,000 smoking plants in our city are trying, with very rare exceptions, to comply as far as is in their power with the regulations of a hard ordinance. Those who are at the head and front of our anti-smoke crusades say that smoke is unnecessary and that it is the easiest thing in the world to suppress it. This is not so; it is most difficult. It can and should be abated as far as possible, consistent with the protection of our vast interests.

* * *

The problem of complete combustion of coal, simple as it appears, has never yet been solved. There are varying and complex conditions to be dealt with. Among these varying conditions are the height and construction of chimneys and smokestacks; the character and capacity of furnaces, the sort of coal used, the amount of load to be raised, the regularity or irregularity of this load and various and numberless other difficulties. In certain cases conditions are such that this trouble is largely overcome. But when a certain comparatively non-smoking chimney is pointed out as an example, and when it is proclaimed that all other chimneys can be made to perform like satisfactory service, the claim and the reasoning are faulty.

England for 600 years has tried by innumerable parliamentary acts to suppress smoke in London, but London still continues a smoky city. Some three years ago I ascended the cupola of St. Paul's and saw smoke floating over that great city in every direction. The famous Welsh coal, generally used in London, emits much less volatile matter and has much less soot than our Illinois coal, but still London, in spite of this and everything else, is a smoky city. Smoke prevention societies have been for many centuries battling for a smokeless London. They have accomplished much, but the London fog, caused by smoke, veils and often shrouds in Cimerian darkness this British metropolis. This problem has defied the edicts of parliament, the efforts of

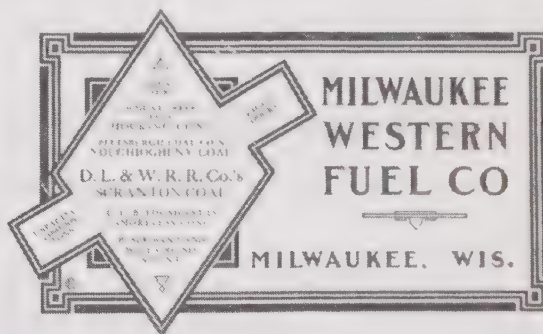
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smoke prevention societies, and has baffled the inventions of both science and art.

It is to be hoped that our literary and other smoke reformers of Chicago will succeed where all the rest of the world has failed and they will solve the problem that has defied the ingenuity and genius of Watt and Faraday and all the renowned inventors of both Europe and America. When these gentlemen succeed in squaring the circle, in finding perpetual motion, they will then succeed in solving the question of perfect combustion and of smoke suppression. This subject calls for sane and wise treatment and cannot be advanced by spasmodic or other sentimental crusades. Chicago is a great workshop and cannot, with either profit or advantage, be turned into a picture gallery. The discussion of the artistic features of this great subject must be deferred for a future time.

* * *

Let me say in conclusion that the drastic measures advocated for the enforcement of an ordinance that would be most despotic and ruinous if carried out to the letter are not either sane or wise measures. The decision a few months ago on a test smoke question in the Supreme Court of our state, points out a sensible way of dealing with this question. Certain of the judges of our municipal court seem to set this decision at defiance. To an onlooker it seems that justice in this case holds the scales with eyes blinded by personal and popular prejudice.

Is it right that men building up the business of our city, who are creating capital, who are employing labor and who are contributing so much to the public good, shall be dragged before our courts like common criminals and fined and insulted and humiliated simply because of their inability to do the impossible? Most of these men have put in smoke consumers and have tried every device within their reach

and have done everything within their power to prevent smoke and comply with the demands of the coal inspection department.

Women belonging to art societies are now asked to form into companies and brigades and swoop down upon the owners of 17,000 smoking chimneys. This thing is being carried too far. It is time to cry out against it and to call a halt. There are many pernicious evils from which we are made to suffer quite as much as from the smoke evil. One of the very worst of these evils is the evil of intermeddling in the legitimate affairs of other people. From officious and mischievous busybodies, good Lord, deliver us.

It would be an added blessing if we had more smoke in the sense of a result of starting up our idle factories, so as to give employment to thousands of idle men and an opportunity to them to earn decent support for their wives and children and those dependent upon them. These smoke reformers must be crazy. There is nothing the matter with carbon. Carbon is healthy. Carbon is helping to make our city rich. Carbon is king.

RECEIVER MUST HAVE UNION MINERS.

Judge J. V. Bourland, in appointing a receiver for the Hiawatha Smokeless Coal Company of Coaldale, Ark., ordered that the receiver employ none but union men in the mine or sell the mine. Judge Bourland stated at a banquet of the Arkansas State Federation of Labor here some months ago that he would never grant an injunction against a labor union in the interests of a corporation.

The Dickinson coal interests of West Virginia have given H. H. Rogers' new railway, the Virginian, a contract for 1,000,000 tons of bituminous coal.

O. L. GARRISON, President

H. H. TAYLOR, Sec. and Treas.

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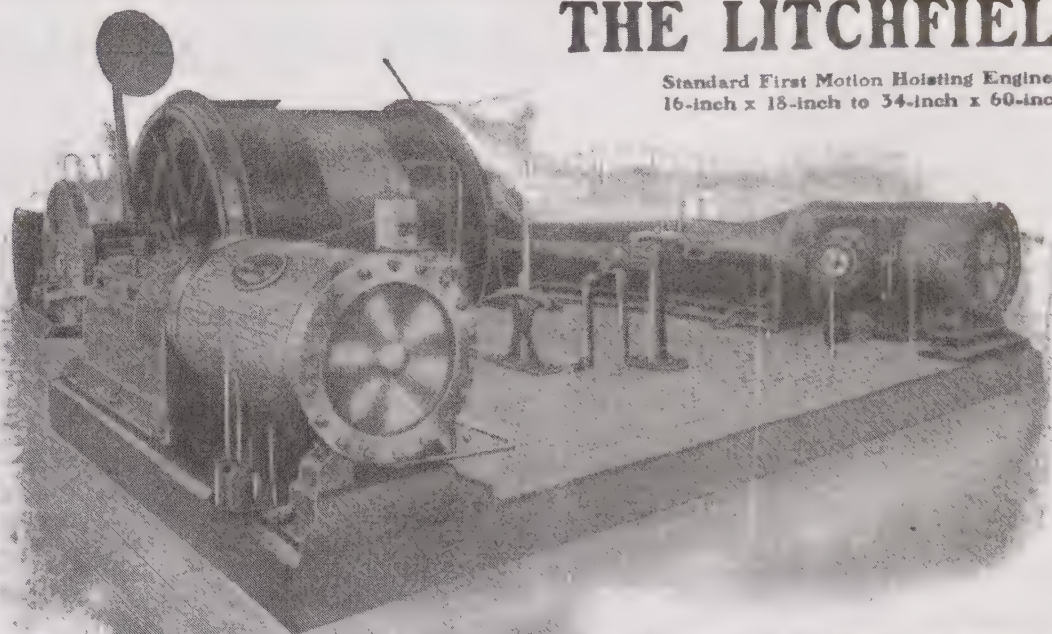
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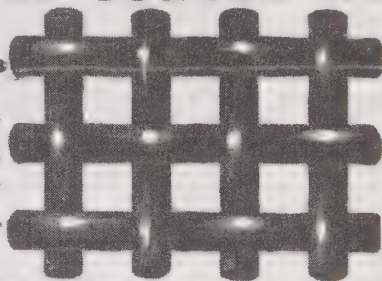
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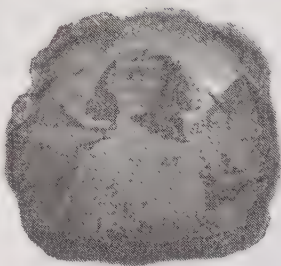
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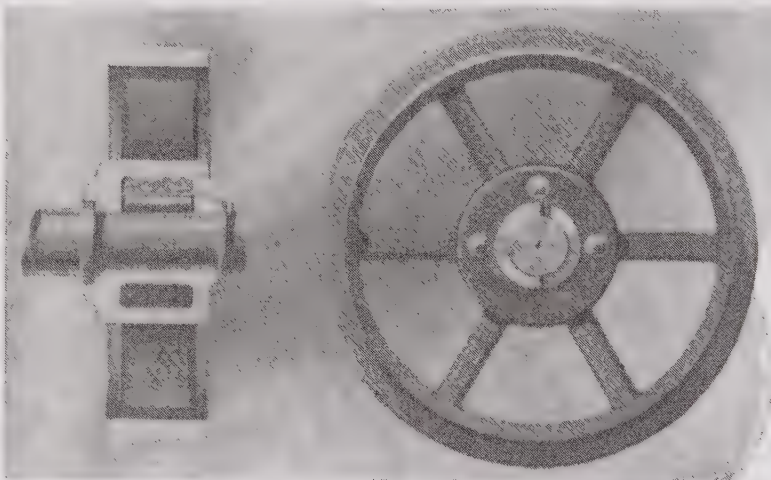
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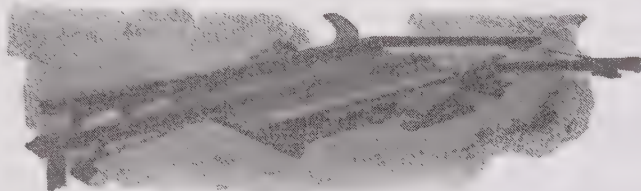
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WASHED SLACK

Rumors are heard of the organization of a new coal company to have headquarters in Oskaloosa, Ia.

After several months' tunneling a three-foot vein of coal has been struck in the Clallam coal mine at Clallam Bay, Wash.

Coal found on the north shores of Lake Superior is not regarded as commercially profitable by the Minnesota department of mines.

The coal mine at Lovington, Ill., at 240 feet passed through a three-foot vein of coal and five feet of fire clay, at 870 feet they struck five-foot vein of coal and 18 inches of terra cotta clay, at 900 feet they struck eight foot of coal and a good vein of fire clay.

The first of the 500 barges to be built by the West Kentucky Coal Company have been launched and hereafter it is expected that two will be launched a week. It is probable that a permanent barge building plant will be maintained on the Tennessee River.

Wholesale coal dealers of Omaha will file a protest before the Interstate Commerce commission through the traffic bureau of the Commercial club against the advance in coal rates from East St. Louis to Omaha, amounting to 20 cents per ton over the present rates.

Coal operators of the Hocking valley are scanning with much alarm the reports of the tonnage of coal being shipped this winter and spring by the railroads of West Virginia. With the coal business at the lowest point for years in Ohio, West Virginia shows a steady increase.

Improvement is noticed in the Connellsville coke region. Telegraph and telephone operators say they have been busier than in months previously. Operators say the limit of the hard times has been passed, that the tide is turning and that things will grow better gradually from now on.

President G. L. Clausen of the New Haven Coal Mining Company, who has had charge of the work of construction at Albert Lea, Minn., has completed his work in Owosso, resigned as head of the company and returned to his home in Chicago. His successor has not yet been chosen.

The Stoot Briquetting Company, which recently purchased a site for a plant at Superior, Wis., is now erecting the coal bins necessary to the outfitting of the property. It is stated that the plant will be ready for operations Aug. 1 and that it will be putting out briquets for fuel purposes in the fall.

The miners employed at the Canada West Coal Co.'s collieries at Taber, Alberta, are on strike. The coal operators met a deputation of the miners, Saturday, to draw up a new agreement, President Sherman of the district being present. The men demanded a closed shop, which the operators refused.

From the discovery of petroleum in Pennsylvania at the beginning of the Civil War until the present time the industry has exported illuminating and other refined oils to the value of about \$3,000,000,000, which is within 10 per cent of all the actual money of all kinds possessed by all the people of the United States.

Kentucky coal operators are said to be negotiating with the Illinois Central Railroad Company for a contract to supply the road with all of its coal. If terms are agreed upon mines on the Illinois Central Railroad in Kentucky will enjoy real prosperity, for it will require the entire output to supply the demand of the big system.

Coal operators of Ohio have joined their fellows of Pennsylvania in fighting to get the section providing for reciprocity in the coal trade between the United States and Canada restored to the pending tariff measure.

Missouri coal operators say the new railroad schedule will operate in favor of the Illinois mines and permit them to put coal into Kansas City and other state markets cheaper than the Missouri coal.

Seeking shelter from rain in the mouth of an abandoned coal mine along the Alleghany Valley Railroad near Saltsburg, Pa., John Snowden of Toronto, Ohio, was killed and William Garren overcome by gas fumes, is in a critical condition.

O. A. Ford and Frank A. Peacock of Portland, Me., have discovered a process of manufacturing synthetical coal, which it is claimed by all the chemists will take the place of the fuels now in use, when the latter have become exhausted.

William H. Woods filed a bill in equity at Pittsburg, Pa., against the Pittsburg Coal Company and the United Coal Company asking an injunction to restrain the latter company from mining coal from land owned by him in Elizabeth township.

Waynesburg, Pa., capitalists have obtained 30-day options on 1,000 acres of coal in South Franklin township just south of Washington, at \$200 an acre. The projecting of a trolley line from Waynesburg to Washington through the territory prompted activity.

Charles P. Bierach, a well-known citizen of the county, and formerly a leading business man in the city, was killed in a runaway accident, near his home south of Pleasure Ridge Park, Louisville, Ky. He was in the coal business 40 years before retiring a few years ago.

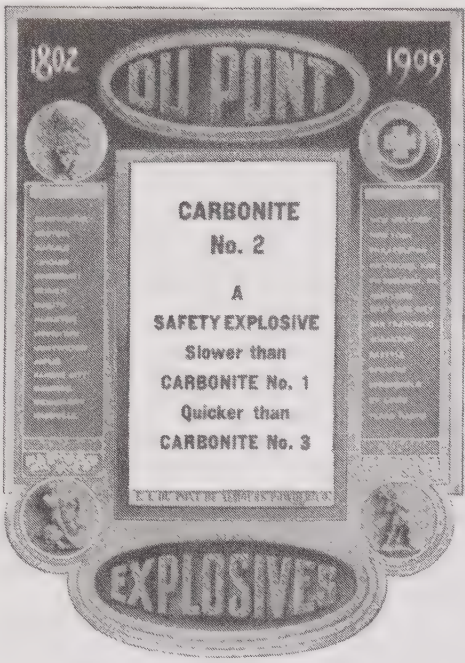
The Ohio Fuel Supply Company of Columbus has decided that it will have some share in the great Basil-Baltimore gas field, which has been opened by the Columbus Gas and Fuel Company, and has secured some leases close to the big wells of the other Columbus company.

Announcement is made today that the business of the National Coal and Supply Company has been consolidated with that of the Day Coal Company and in the future all business will be conducted in the name and from the office and yards of the Day Coal Company at Sioux City, Ia.

While giving his fireman a lift on a coal train at Norristown, Pa., Conductor Levi Miller shoveled his month's wages, \$98, into the firebox. Miller, to stoke the fire, threw off his coat, and not until he put it on again did he notice that his wallet had fallen out, and unnoticed he had shoveled it into the fire.

Gilbert D. Preston, president of the Interstate Coal and Coke Company, shot and killed himself at his home in Columbus, O. For twenty years Preston was connected with the Johnson Coal Mining Company and later with the Loraine Coal and Dock Company. With other local men he formed the Interstate Company.

John M. Roan, formerly general manager of mines for the Sunday Creek Company but now in charge of the development of the coal properties around Dante, Va., owned by the Cumberland syndicate, says that the coal properties around Dante are the greatest in the south and that the demand is strong enough to take all the coal which is being mined.



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FUEL

A WEEKLY JOURNAL DEVOTED TO COAL, COKE & KINDRED INDUSTRIES

Vol. XIII. No. 2.

CHICAGO, ILL., MAY 11, 1909.

Price \$3 Per Year.

LEGISLATION AFFECTING COAL MINING INDUSTRY

Conferences Between Representatives of Illinois Coal Operators Association and Illinois Mine Workers Result in Agreement to Mutually Support Two Measures Only, Other Pending Bills to Go to Proposed Mine Investigation Commission.

Legislation affecting the coal mining industry is in a much more satisfactory shape at Springfield as a result of conferences between representatives of the Illinois Coal Operators' Association and the legislative committee of the United Mine Workers of Illinois during the past week. On Thursday a definite understanding was reached by the representatives of the operators with the Miners' legislative committee and with Speaker Shurtleff and Mr. Terrill, chairman of the House Committee on Mine and Mining, that the Senate Bill amending the Miners' Qualification Act will be allowed to pass; and that in consideration thereof a bill may be enacted constituting a mining commission. This commission is to be composed of three miners and three operators, to be named by the respective organizations and appointed by the governor, together with three other men not identified or affiliated with or dependent upon either side or in political life, to be appointed by the governor. The commission will report to the next session of the General Assembly, and it is agreed that all other mining bills now pending or which may be introduced shall be referred to this commission. The House Committee on the same day reported out unanimously the bill increasing the compensation of members of the State Mining Board.

This greatly simplifies the situation, and is satisfactory to all parties. Following is the text of the bill which will be introduced to establish the Mining Investigation Commission of the state of Illinois, prescribing its powers and duties, and making an appropriation for its support:

Be it enacted by the people of the state of Illinois, represented in the General Assembly:

Section 1. That a commission be established to be known as the Mining Investigation Commission of the state of Illinois, consisting of three coal mine owners and three coal miners nominated by the respective organization of both interests affected and appointed by the governor, together with three qualified men, no one of whom shall be identified or affiliated with the interests of either the mine owners or coal miners or dependent upon the patronage or good will of either, nor in political life, who shall be appointed by the governor. Each member of the said commission shall have equal authority, power and voting strength in considering and acting upon any matters which may be brought to the attention of the commission and on which the commission may act and the said commission shall have power and authority to investigate the methods and conditions of mining coal in the state of Illinois with special reference to the safety of human lives and property and the conservation of the coal deposits.

Sec. 2. In making any investigation as contemplated in this act, said commissioners shall have the power to issue subpoenas for the attendance of witnesses, which shall be

under the seal of the commission and signed by the chairman or secretary of said commission. In case any person shall willfully fail or refuse to obey such subpoena, it shall be the duty of the circuit court of any county, upon application of the said commissioners, to issue an attachment for such witness, and compel such witness to attend before the commissioners, and give his testimony upon such matters as shall be lawfully required by such commissioners; and the said court shall have the power to punish for contempt, as in other cases of refusal to obey the process and order of such court. The fees of witnesses shall be the same as in courts of record and shall be paid out of the appropriation hereinafter made. And upon order duly entered of record by the said commission any one or more members of the said commission shall be empowered to take testimony touching the matters within the jurisdiction of the said commission and report the same to the said commission. Said commission shall have power and are authorized to adopt a seal and to make such rules not inconsistent with or contrary to law for the government of proceedings before it, as it may deem proper and shall have the same power to enforce such rules and to preserve order and decorum in its presence as is vested by the common law or statute of this state in any court of general jurisdiction.

Sec. 3. Said commission shall meet at the State Capitol Building in Springfield on the second Tuesday after notice of their appointment and shall immediately elect a chairman and secretary from among their number, one of whom shall be a coal mine owner and the other a coal miner. Said commission shall cause a record to be kept of all its proceedings. Five members of the said commission shall constitute a quorum for the transaction of business, but a less number than a quorum may adjourn the meetings of the commission from time to time. Meetings of the said commission, other than called meetings as provided for herein, may be held at such times and places within the state of Illinois, as may be fixed by the said commission. A meeting of the said commission shall be held upon the written request of any three members of the said commission signed by them and delivered to the secretary, who shall, upon receipt of such request, notify each member of said commission by mail of such meeting so to be held, and the time and place thereof. And no such meeting shall be held less than five days after the mailing of notice of the said meeting to the members of said commission by the secretary. Such called meetings shall be held either in Springfield or Chicago.

Sec. 4. Said commission shall report to the governor and to the General Assembly at its next regular session, submitting so far as they have unanimously agreed a proposed revision of coal mining laws of the state, together with such other recommendations as to the commission shall seem fit

and proper, relating to coal mining in the state of Illinois. And where there is not unanimous agreement upon any recommendation there shall be submitted in like manner separate reports embodying the recommendations of any one or more members of the said commission, which said reports shall each set forth in detail the recommendation of the commissioner or commissioners signing said report and shall embody his or their respective reasons for such recommendation and his or their objections to the reports of other members of the commission.

Sec. 5. The members of said commission appointed upon nomination as aforesaid, shall receive no compensation for their services. The remaining three members of the commission shall receive as compensation for their services the sum of \$—— per day for each day actually employed by them as such commissioners. All members of the said commission shall be reimbursed for their actual expenses incurred in and about the actual work of such commission.

Said commission may appoint a stenographer or clerk and such other employes as are necessary, and shall fix their compensation and may incur such other expenses as are properly incidental to the work of the commission.

Sec. 6. The sum of twenty-five thousand dollars (\$25,000) is hereby appropriated for postage, stationery, clerical and expert services, and incidental traveling expenses of the commission, and the per diem of members as herein authorized, and the auditor of public accounts is hereby authorized to draw his warrant for the foregoing amount, or any part thereof, in payment of any expenses, charges or disbursements authorized by this act, on order of this commission, signed by its chairman, attested by its secretary, and approved by the governor. The State Board of Contracts is hereby authorized and directed to provide all necessary printing for the Mining Investigation Commission, and testimony taken by it shall be reported in full and may be published from time to time by the commission.

IMPROPER SUPERVISION CAUSES MINE EXPLOSIONS

"Improper supervision in coal mines and lack of discipline in the men employed, is the cause of almost all mine explosions," declared Prof. N. W. Lord, director of the School of Mines at the Ohio State University, and consulting chemist for the government testing station at Pittsburgh, in an address before the Engineers' Club of Columbus.

"As long as three-fourths of the miners employed in the coal mines are foreigners, and cannot speak the language of this country, just so long will there be explosions," continued Prof. Lord. There are also numerous men employed in the mines who present certificates as full-fledged miners, and who use open lamps, load coal, and 'shoot,' who never saw a coal mine six months before. These are the men who take the chances and who are sometimes responsible for the big mine disasters which startle the country.

"There is lack of discipline which is startling. There seems first to be little supervision, and second there is a lack of respect for authority. In one mine which was blown up not long ago, and in which more than 600 lives were lost, the manager told me 32 languages were spoken, and those who spoke other languages than English outnumbered the English speaking miners five to one. No wonder a foreman has to talk with his hands, and no wonder the foreigner does not understand instructions.

"The system now seems to be to replace skilled practical miners with foreign laborers who are unskilled. To my mind, the proper method to prevent mine explosions is to require obedience to orders. There should be rigid discipline from the manager or superintendent on down to his foreman and men. Foremen and inspectors should be employed in larger numbers.

"Operators do not want their mines blown up. There is too much at stake for them to stop at precautions to prevent a serious disaster. It is the labor question which causes the trouble.

"Explosions figure very largely in every mine. They are liable to occur in any mine at any time. But explosions account for only a small number of deaths in a mine. There are other causes too numerous to mention, but the United States stands at the bottom of the list for deaths caused by mine explosions. The table of the five principal mining countries in the world, showing the death rate by explosions for every thousand miners employed, is as follows: France, .091; Belgium, 1; Great Britain, 1.28; Germany, 2.06, and the United States, 3.39.

"The primary causes of explosion are explosive gas, dust, or both combined, or fire damp. Natural gas filled with air is fire damp and under certain conditions will explode. Coal gas or air will not explode unless set off. The 'Wolf' lamp will detect the presence of a large accumulation of fire damp but is almost useless where it is scattered, and for that reason often a fire boss will encounter great quantities of gas at one time which will not cause damage, and again not discover any, on account of it being scattered, and later there is an explosion.

"Watering the accumulated coal dust is a good thing if properly done. Water should be sprayed on the dust, the walls, floors and coal, but if it is poured on from a tank only once or twice a week it will do no more good than if water were poured on a duck's back. There is bound to be dust, no matter how carefully it is taken care of. The air should be warmed and saturated before being sent through the fans.

"Explosions, again, are caused by careless miners, who, to make more money for themselves, go to extremes in the face of danger. They 'shoot' coal with black powder or they fill up the holes with coal dust to give the explosion force, or they shoot up instead of down, as they should be required to do. In Illinois, for instance, they tried a system of shooting coal by skilled men. When word was given the miners would leave the mine and only the shooters would stay. They were supposed to know their business, and yet in 1905 82 men lost their lives, while in 1901 only three were killed. And all of these men were skilled shooters."

WOMEN IN GERMAN TECHNICAL HIGH SCHOOLS.

Consul-General Richard Guenther, of Frankfort, states that the total number of female students inscribed in the German technical high schools this term is 1,230, divided as follows: Hanover, 348; Stuttgart, 292; Brunswick, 190; Dresden, 145; Darmstadt, 108; Karlsruhe, 75; Berlin, 52; Munich, 19; Dantzig, 1. Of the total, 14 are matriculated, 8 being at Stuttgart, of whom 4 study mathematics and natural sciences, 2 general courses, and 1 each architecture and pharmacy. Four are matriculated at Karlsruhe, 2 taking the general courses and 1 each architecture and chemistry. One is matriculated at Dresden, taking the general courses, and 1 at Darmstadt, studying architecture. Two ladies are recorded as "auditors" (Zuhoerer) at Dresden, 1 studying architecture and 1 taking the general courses.

THE COKING POWER OF COAL

In order to ascertain the nature of the substances influencing the capacity of certain coals to furnish hard and compact coke, O. Boudouard, relates in a paper before the Academy des Sciences, France, he studied the action of a number of solvents on a good coking Belgian coal. The results showed that only three reagents are at all suitable—nitric acid and concentrated sulphuric acid, the dehydrating influence of which on hydro-carbons is sufficiently energetic to carbonize them completely; and Schweitzer's reagent, which dissolves the cellulose constituents of the coal.

Coals are chemical aggregations of unknown constitution, their formation from the vegetable residues of a past geological epoch having probably, in early stages, been analogous to those now observable in the decomposition of large quantities of vegetable matter. Since humic acid does not exist ready-formed in coking coals, whereas this acid is always found in coals that have become oxidized and lost their coking power, it is natural to seek for the origin of that acid in the carbohydrates of the coal, especially the cellulose. The composition of the humic acids obtained from different coals has already been shown to be analogous to that of the corresponding acids from sugar or peat. Moreover, it is highly probable that the hydrocarbon substances giving rise to the formation of humic acid do not exist in their simplest form in fuels, but in a state of extensive condensation or polymerization, through destructive processes through which the vegetable matter has passed, the chief characteristic of the whole series of the decomposition products of vegetable tissue being the accumulation of carbon at the expense of the hydrogen and oxygen. Hence, there is small prospect of finding any large quantity of carbohydrates in coal, these substances having been more or less completely transformed.

The following table shows the results obtained with Bruay smithy coals III. and IV., and "¾-gras" V., which furnish compact hard coke, and do not contain any humid acid in their original state, whereas, after oxidation, this acid is present, and the coal yields a pulverized coke:

Coal.	Treatment.	Coke.	Ash.	Vol. mat.	Appear. of coke.
III—Natural	70.51	4.64	24.85	Compact, turgid.
1—With KHO, 5% and 25%		73.21	5.64	21.15	Compact, turgid.
2—With hot concentrated HCl		73.13	9.67	23.2	Compact, friable.
3—With Schweitzer's reagent		73.64	4.19	22.17	Dusty.
IV—Natural	79.185	2.675	18.14	Compact, turgid.
1—With KHO, 5% and 25%		78.98	5.49	15.53	Compact, turgid.
2—With hot concentrated HCl		79.52	2.84	17.64	Compact, friable.
3—With Schweitzer's reagent		77.31	2.76	19.92	Dusty.
V—Natural	59.36	3.07	37.57	Compact, turgid.
1—With KHO, 5% and 25%		61.31	2.46	36.23	Compact, turgid.
2—With hot concentrated HCl		64.98	1.31	33.74	Compact, turgid.
3—With Schweitzer's reagent		67.37	3.25	29.98	Dusty.

This table shows very clearly that if coking coals be treated with caustic potash, hot concentrated hydrochloric acid and Schweitzer's reagent in succession, their coking power disappears almost entirely. The sample V. also exhibits a considerable diminution in the proportion of volatile matter present.

The peculiar action of Schweitzer's reagent justifies the

assumption that the coking power of coal is due to the presence of substances derived from cellulose. The addition of an excess of acetic acid to the cupric solutions of natural coking coals throws down a very small flocculent precipitate of a greyish color, and capable of resisting the action of concentrated acids, alkalis and organic solvents—that is to say, possessing the characteristics of cellulose. Furthermore, oxalic acid can be readily detected in the products of the oxidation of coal by nitric acid, and in those obtained by treating such coals with fused caustic potash. On the other hand, it is known that nitric acid will oxidize cellulose to furnish oxalic acid as a final product, while potash transforms the same substance into oxalic acid and methyl alcohol. The cupric solutions form oxidized coals will not furnish any precipitate with acetic acid; and the ashes of these coals, after treatment with Schweitzer's reagent, always contain a notable quantity of copper, this metal having been combined as copper humate.

In short, the various organic solvents have little influence on the quality of the coke furnished by the spent coal; and when the surplus solvents are expelled from the solution there remains brown, tarry bodies, the amount of which is small, except in the case of pyridin, which solvent extracts more than 10 per cent. Concentrated hydrochloric acid has no effect; while concentrated sulphuric and nitric acids deprive the coal of its coking power, which is also reduced to a considerable extent by fused caustic potash and Schweitzer's reagent. The successive action of aqueous caustic potash, concentrated hydrochloric acid and Schweitzer's reagent, destroys the coking power completely; and the explanation of this phenomenon may be sought in the solvent power of the cupro-potassic reagent on derivatives of cellulose. The humic acid found in oxidized coals that will no longer coke is formed by the oxidation of the hydrocarbon substances present in a more or less condensed or polymerized state in the coal. The fact that anthracites do not furnish a compact coke is capable of very simple explanation, namely, that this class of coal represents a very advanced stage of the transformation of the vegetable matter, and, therefore, no longer contains any cellulose substances, or those of hydrocarbon origin in a state of transition. For this reason no trace of humic acid can be detected in natural or oxidized anthracites. Finally, it should be noted that the quantity of humic acid necessary to deprive coal of its coking power is very small.

BELGIAN IRON AND MACHINERY INDUSTRY.

Consul H. Abert Johnson, writing from Liege, in regard to the iron and machinery trade in Belgium says: "Out of 41 blast furnaces in Belgium only 33 are in active operation. The 16 furnaces of Luxembourg are all in blast. At Liege 14 out of 18, and in the Province of Hainaut 13 out of 20 furnaces are in active operation. In machine construction manufacturers are decidedly alarmed over the new rates which the French tariff commission has proposed. The federation of Belgian manufacturers of machinery has been active in representing to the Government the serious damage that the proposed French tariff would produce in the Belgian machine industry, and the federation has taken steps to cause the Belgian Government to intervene, if possible, to prevent such an impending calamity. This protest is easily understood when it is realized how absolutely dependent the industries of this country are on the foreign market without which they could not be carried on.



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Columbus.

JOAQUIN MILLER.

Behind him lay the gray Azores,
Behind the Gates of Hercules;
Before him not the ghost of shores,
Before him only shoreless seas.
The good mate said: "Now must we pray,
For lo, the very stars are gone.
Brave admiral, speak, what shall I say?"
"Why, say, Sail on! Sail on, and on!"
"My men grow mutinous day by day;
My men grow ghastly, wan and weak."
The stout mate thought of home; a spray
Of salt wave washed his swathy cheek.
"What shall I say, brave admiral, say,
If we sight naught but seas at dawn?"
"Why, you shall say at break of day,
"Sail on! Sail on! Sail on, and on!"
They sailed and sailed, as winds might blow,
Until at last the blanched mate said:
"Why, now not even God would know
Should I and all my men fall dead.
These very winds forget their way,
For God from these dread seas is gone.
Now speak, brave admiral, speak and say—"
He said: "Sail on! Sail on, and on!"
Then, pale and worn, he kept his deck,
And peered through darkness. Ah, that night
Of all the dark nights! And then a speck—
A light! A light! A light! A light!
It grew, a starlit flag unfurled!
It grew to be Time's burst of dawn.
He gained a world; he gave that world
Its grandest lesson: "On! Sail on!"

THE MINE INVESTIGATION COMMISSION.

The result of the conferences held between the representatives of the coal operators and the coal miners of the state at Springfield is a vindication of the belief of leaders on both sides in the coming together of differing elements for the achievement of results. In all matters connected with labor problems it were folly to declare that either the employer or the employe alone should decide what is to be done in legislation. The right way of settling matters of this sort is to settle them after full discussion between the parties affected, as in this case. The great need of the mining industry in Illinois is a comprehensive and well-considered code of mining laws that shall embrace all legislation heretofore enacted that is good, an elimination of all that is bad, and such additional requirements as shall round out the whole into a symmetrical and easily understood code, free from duplications and contradictions; which not only prescribes the penalties and requirements but defines all the terms used in the law so that there can be no mistakes. This can only be done by a thorough study of the laws by men who have the technical and practical knowledge acquired by actual experience in mines and with mines.

With the united support of both miners and operators the bill establishing a mine investigation commission should pass without serious opposition from any source. It is a step forward in the present movement for conserving as far as possible the mineral wealth of the state and for protecting to the utmost the lives of the men in the mines. While we may not have reached the point attained by the older countries, American learning and skill can easily attain the highest standard when Americans make up their minds that they will attain it. The right way is the only way to mine coal or to mine any other mineral, and that right way is the way that will save the greater part of the mineral. And the means required must be the means by which this can be done with the least possible waste of material and at the same time the greatest safety to the worker. These things a good commission can easily bring about, if it be properly supported, as doubtless it will be.

WHERE OPPORTUNITY AWAITS.

Carl Scholz, manager of the mining department of the Rock Island-Frisco lines of railroad, has just issued a map of the immense section of country reached and traversed by that great system, with special reference to the mineral resources. It is a long journey to go even from an initial point of this system to the furthest point to be reached by a continuous journey, but when this map is studied and the territory embraced considered, it seems almost beyond the possibilities that it has all grown up within the memory of millions of living men. The Rock Island-Frisco system with its proprietary and auxiliary lines now enables the traveler to reach the best sections of Illinois, Indiana, Kentucky, Tennessee, Alabama and Mississippi, and practically every state west of the Mississippi River, an empire more vast than any of ancient times.

But extent of country is perhaps of less consequence than the character of the country. Looking at this map

with that in view, the mind is more impressed than by its vastness; yet the amazing wealth held for the coming generations is only faintly comprehended. Lines of this railroad run through the heart of the coal fields of Illinois, Indiana and Alabama on the east side of the great river; and through those of every discovered coal field west of the river save the lignite fields of Texas and the mountains of western Colorado. These lines, or other lines, pass through the center of other mineral fields, including the oil and gas fields of the states named, and of Kansas, Oklahoma and Texas. They reach the great deposits of lead, zinc and gypsum; the deposits of salt, iron, copper, granite, asphalt, silica, glass, sand, marble, sulphur, potter's clay, fuller's earth, bauxite, soapstone, manganese, whetstone and Portland cement.

The centers of future industrial empires are located in this vast and wealthy territory, and opportunities, instead of being few, are more abundant now than ever before in the world's history. The agricultural resources of the states here embraced are not mentioned in this map, but other maps cover these. Briefly it may be said that everywhere the soil is of such character as to promise all that is needed for the up-building of a community engaged in developing these mineral resources. There is wealth such as even the present generation does not know, and the foundation of a million fortunes and a hundred million homes. It is a map potent in suggestion and carrying valuable lessons to all who can learn them.

Tennessee has heretofore had a law by which it was forbidden to have more than ninety-nine of the state convicts engaged in any one pursuit, and thus minimize the effect of competition with free labor. The General Assembly that has just adjourned paused long enough between passing prohibition measures to amend this wholesome law and allow as many as 199 convicts to engage in a single pursuit. It is not believed that the larger number will be supplied except to those engaged in the business of mining coal.

Several very worthy enterprises have been materially assisted by handsome contributions from citizens of Nashville, Tenn., over three hundred thousand dollars having been raised for the Young Men's Christian Association and the Young Women's Christian Association to be expended in new buildings. It's a good use for the money. Besides, after the first day of next July the donors couldn't spend it for drinks without leaving the state, anyway, they say.

This country annually makes automobiles to the value of one hundred and fifty million dollars, while there are made furnaces for house heating purposes to the value of twenty-five million dollars. This is all wrong; let us have more furnaces; automobiles are well in their place, but they do not burn coal.

If Uncle Sam really needed that twenty-nine millions and couldn't get it he might have dropped a line to the Texas officials and secured some valuable information.

Churches in some of the cities are establishing check rooms for the ladies' hats and require headgear to be checked before each service. It is evident that somebody is trying to break up Easter services and other large church assemblies.

The Missouri board of railroad commissioners have extended the time from May 1 to May 15 for the maximum tariff of state coal rates to take effect. There will probably be a further hearing on the subject.

They are using a new and popular "soft" drink in Atlanta, Ga., that is known as "Bud." The officials are suspicious and are charging that Bud is a son of old Mr. Weiser.

Two more kinds of weather have been added to our fifty-seven varieties during the past few days in Chicago.

Did Mr. Thompson know about Mr. Murphy before Mr. Murphy raised Mr. Thompson's rent?

UNITED STATES STEEL BUYS MINES.

The United States Steel Corporation has acquired control of the Little Vermilion coal properties at Georgetown, Ill., in the heart of the rich Danville mining district. The mine is rated as having a capacity of 3,000 tons a day and is considered one of the best coal properties of the state. This as well as other recent purchases of coal mines and measures in Illinois and Indiana by the steel trust is ascribed to an intent to provide a practically inexhaustible supply of fuel for the great steel producing plants of the corporation at Gary, Hammond and South Chicago. The condition of the coal market is said to have greatly aided the trust in the furtherance of this design. Illinois and Indiana coal is selling at present at the lowest prices for years, and the slump in the business has been marked by the retirement of several of the smaller firms. In addition to this purchase, the Illinois Steel has secured valuable properties in and around the Danville district, in the neighborhood of the rich Clinton, Ind., coal fields, and is said to have purchased several thousand acres of coal lands in the southern districts of Indiana and Illinois.

MUST PAY FACE VALUE.

Miners employed in Kentucky mines are entitled to be paid in lawful money bi-monthly for their labor, and employers cannot pay in checks which have a reduced value when redeemed by the company, declares the Court of Appeals of that state. The decision was announced in a case of the Kentucky Coal Mining Company against Ben J. Mattingly. The appellee conducted a store which had no arrangement for handling the metal checks of the company. He took in several hundred dollars worth of them, and when he presented them for payment the company offered to take them at 10 per cent less than their face value. Mattingly sued to recover the face value of the checks.

ONLY BLACK POWDER IN KANSAS.

Kansas operators and miners, at a conference held recently, to comply with the state law adopted an agreement of which one section reads: "There shall be no other explosive than black powder used for shooting coal in the mines except upon the mutual consent of the pit boss and the mine committee who may allow the use of other explosives in entries and slopes or places regarded as deficient and faulty."

FROM THE LAND OF THE SHAMROCK

Warm Praise of the Preacher.

Dublin produces a type of old woman as peculiar to the city as its jaunting cars.

"Och, Biddy," says one pronounced specimen to another as they met in O'Connell street on a Monday morning, "were you not down at Arran quay chapel last night to hear the sermon?"

"No jewel, I was not there. What was the sermon about?"

"Ah, the finest sermon on hell you ivir heard from a young priest called Father Clancy, the darlinest young man you ivir set eyes on, and him just ordained the other day!"

"Arrah, go on, woman! What would a young man like that know about hell?"

"Know about hell, is it. He knows more about hell than all the priests in Dublin. I declare, if you were listenin' to him, you would think he was born and reared in it."

Polishing the Pole.

Pat stood and read the sign over the bootblack stand on the West Side, plunged in profound thought.

"Shine, 5 Cents. Polish, 10 Cents."

He pulled his pipe from his mouth and spat vigorously.

"Faith," was his comment, "and they'd be doin' well to char-r-ge double for dagoes, too, I'm thinking."

Breaking It Gently.

Pat had been delegated by his fellow employes to tell Mrs. Casey the news of her husband's accidental death. On the way to the Casey home Pat pondered on how to break the news to the widow. Finally he hit on what to him seemed a most humane way of preparing Mrs. Casey for the sad news.

Knowing the violent hatred which Mrs. Casey as well as all loyal Irishmen have for the A. P. A., he said on greeting the woman:

"Ah, Mrs. Casey, it is sad news I have to bring you. Your husband, Mike, has turned an A. P. A."

"Mike turned A. P. A.! The scoundrel, I hope he is dead."

"He is," said Pat.

The Bishop's Benediction.

Bishop Magee was once asked to marry a gentleman who was a great whiskey manufacturer in Dublin. The bishop felt disinclined to do this, being very much opposed to the trade; but, as the gentleman in question had a great reputation and was known to be very charitable, the bishop did not like to refuse. After the ceremony the bridegroom said:

"I do not know how to thank your lordship. I wish I could do something that might be pleasing to you. All I can say is, 'The Lord be with you!'"

The bishop replied, "And with thy spirit!"

It Was Almost An Invitation.

"Sure, Casey was a good fellow," said Pat, speaking of a friend who had died.

"He was that," replied Mike, "A good fellow was Casey."

"And a cheerful man was Casey," said Pat.

"A cheerful man was Casey, the cheerfulest I ever knew," echoed Mike.

"Casey was a generous man, too," said Pat.

"Generous, you say? Well, I don't know so much about that. Did Casey ever buy you anything?"

"Well, nearly," replied Mike, scratching his head. "One day he came into Flaherty's barroom, where me and my friends were drinking, and he said to us, 'Well, men, what is it going to be this time—rain or snow?'"

Endorsed the Captain's View.

It is narrated that two Irishmen enlisted in the British army under a captain who was somewhat pompous and who one day drew up his new soldiers with a view of inspiring a patriotic feeling in them by a little address. As a preliminary, he began: "Soldiers, why should a man be willing to fight and to die for his king and his country?" He paused for a reply, or rather to give time for them being ready for the answer. In a moment Pat turned to his companion in arms and said to him in an emphatic manner: "Mike, the captain is right. Why should we?"

The Irishman's Love Letter.

An Irishman had made a date with his best girl and when she failed to keep it wrote her as follows:

"My Darling Nora: I met you last night and you never came. I will meet you again tonight, whether you come or whether you stay away. If I am there first I will write my name on the gate post. If you are there first wipe it out and no one will be the wiser. I will always be found at the trysting place, darling. For faith, I cannot keep away from the spot where you are, whether you're there, or whether you're not.

Your Own Mike.

Ah, Sweet Is Tipperary.

Ah, sweet is Tipperary in the springtime of the year!

When the hawthorn's whiter than the snow,
When the feathered folk assemble and the air is all a-tremble
With their singing and their winging to and fro;
When queenly Slieve-na-mon puts her verdant vesture on,
And smiles to hear the news the breezes bring;
When the sun begins to glance on the rivulets that dance—
Ah, sweet is Tipperary in the spring!

Ah, sweet is Tipperary in the springtime of the year,

When the mists are rising from the lea,
When the Golden Vale is smiling with a beauty all beguiling
And the Suir goes crooning to the sea;
When the shadows and the showers only multiply the
flowers

That the lavish hand of May will fling;
When in unfrequented ways, fairy music softly plays—
Ah, sweet is Tipperary in the spring!

Ah, sweet is Tipperary in the springtime of the year,

When life like the year is young,
When the soul is just awaking like a lily blossom breaking,
And love words linger on the tongue;
When the blue of Irish skies is the hue of Irish eyes,
And love dreams cluster and cling
Round the heart and round the brain, half of pleasure, half
of pain—

Ah, sweet is Tipperary in the spring!

—Dennis A. McCarthy.

OPERATORS AND MINERS TALKED TO PLAINLY

Present Method of Selling Coal Demoralizes Prices and Works Injustice, Taxing Small Consumers to Benefit Large Users of Coal — Increased Use of Powder and Drilling of Illegal Holes Cause Most Deaths in the Mines.

Interesting portions of the twenty-seventh annual coal report, just completed by David Ross, secretary of the commissioners of labor of the state of Illinois, and submitted to Governor Deneen, deal with the prices charged for coal, the waste of powder, accidents and their causes in certain cases. Some suggestions are also given touching the conservation of life and property in the coal mines of the state. In part Mr. Ross says:

During the year 1908, covered by this report, the volume of coal production reached its highest point in the history of mining in Illinois, continuing the steady annual increase, noticeable particularly since the revival of industry in 1897. Present appearances, however, indicate that reaction has set in, the effects of which will be noticeable in the succeeding report, not alone in the matter of production, but, what is at least equally important, in values as well.

With a mining equipment easily equal to twice the demands of the market, the natural ambition to get business has resulted in the almost complete demoralization of prices on contract coal. The statement can be made safely and confidently that never before was coal sold to the great consumers at a price so near, if not in some instances below, the actual cost of production. In addition to generally wasteful methods, we are robbing a valuable future inheritance and yielding up without adequate return, an essential element of present and future power.

Absurdity of the Present Method.

What a ridiculous commentary it is upon modern business sense when we are compelled to admit that the larger the concern the less it has to pay for what it needs—that values are not based on worth or the labor required in their production, but on the size of the concerns with which we do business and the extent of the orders they may grant. A great railroad or other corporation lets a contract for 100,000 tons of coal and it is filled at one dollar per ton or less; the private household consumer requiring 20, 30 or 50 tons per annum is charged \$2.50 or \$3 per ton delivered. The local trade is taxed for the benefit of the big consumers. If the larger buyers continue to dodge their share of the costs, the little ones must make good the difference.

A business that taxes most those who can least afford it is not conducted on the principle of the Golden Rule, and its failure is but a question of time. If the transportation interests have not secured too strong a grip on the coal mining industry of the country it is possible to reorganize the business on a basis that will insure justice to all; a reasonable and uniform charge for an indispensable commodity; a fair return on the capital invested, and liberal wages for all classes of men engaged in the occupation. Instead of wasting brain tissue in the foolish attempt to get business at no-profit prices, better devise a plan that would distribute charges by withdrawing favors to great consumers, put all in respect to prices on an equality, and the cost to the average consumer would be less, profits and wages could be increased, while the necessities created by the present unbusinesslike system, which puts everybody at the mercy of someone else, would immediately cease to exist. It is a consummation devoutly to be wished, and its promise will not be realized until some of the power now wasted in mere quibbling over details is applied in a practical manner

that will put the industry on a safe paying basis without oppressing or treating unfairly any legitimate interest.

It is impossible to make the small class of consumers, many of whom live in the coal regions, believe that the average reported value of coal at the mines is but a fraction in excess of \$1.00 per ton; neither can they understand why they should be selected for discrimination in the matter of prices compared with the favored rates granted the great consumers. Under the prevailing system, if it is permissible to speak of it as system, there is valid ground for the double complaint—first, on the part of the smaller consumers that they are compelled to pay excessive prices for fuel; and second, on the part of the mine owners that, figuring on the prices at which the entire output is sold, there is but little if anything in the business for them. So dangerously close has the margin become, that any change, in the way of legislation or otherwise, designed to further protect employes, if it adds to the cost of production in a degree however insignificant, is followed by a threat to close the mines. When an industry reaches a point where the men who have their money invested feel more secure with their property idle than in operation, the time has certainly arrived to test the sanity of present business methods.

The Increased Use of Powder.

More than one-third of the entire tonnage was cut by machines. Notwithstanding an unfavorable machine mining rate, the quantity of coal secured through the use of machines continues to steadily increase. Naturally with an increased machine tonnage the quantity of powder used in blasting would decrease proportionately. The figures show the reverse to be true and that while the machine tonnage for this year compared with last increased 719,969 tons there was an increase of 66,544 kegs in the quantity of powder consumed or an average of 34 tons of coal to each keg of powder.

The coal miners attribute the increase to the fact that powder is cheaper than formerly and therefore inferior in strength. The powder companies insist that there has been no change either in the composition of the product or in the process of its manufacture. It would seem unnecessary to seriously consider either of these claims, but where the facts show that it requires the consumption in solid shooting mines of nearly one pound of powder for every ton of coal produced, the results cannot be considered in any other way than as condemnation of existing methods. In the thick coal seams of the state, furnishing 73.3 per cent of the total product used, and the ratio will continue to increase, powder or some other explosive equally powerful, will be necessary in the process of extracting coal, whether it is undercut before shooting or not. The question therefore resolves itself to the simple proposition, whether having in view the conservation of life and property we shall continue to commit to incompetent and careless hands the use

of dangerous explosives or provide, either by statute or mutual agreement, that only men specially educated and trained for such work shall be employed, whose exclusive duty it shall be to drill holes, charge and fire the same. In commenting on this question in the 1906 Coal Report, in which such a plan was recommended, reference was made to the great and unnecessary expense entailed in the present promiscuous use of powder. On the assumption that fully one-half of the powder consumed was practically wasted, a loss that could be avoided under the proposed plan, in addition to the saving of lives and the production of a better quality of coal, it was estimated that nearly one million dollars could be saved annually to the miners.

So terrific have been some of the explosions in our coal mines, that, had they occurred while the usual complement of men were at work, not a single life would have been spared. It was the consideration of such a possibility that induced the legislature to enact the shot firers' law, effective July 1, 1905. That law was, and is, subject to the fair criticism that it transferred the responsibility from the man who prepared the improper shot to the man whose duty it now is to fire the shot. The friends of that law could do no other than admit the truth and force of such an objection but, in answer thereto, set up the justifiable plea that if the lives of men had to be sacrificed in such work it was the part of wisdom to expose the least number possible to the deadly fury of the blast.

Taking the years from 1903 to 1908 inclusive, three years preceding and three years succeeding the enactment of the

No matter what the cause, whether bad judgment on the part of the shot firers or undue haste in the discharge of their duties, or a desire not to offend miners whose shots were not properly located or prepared, the law has not been given a fair trial. The deaths in most instances resulted from the firing of dead holes which is strictly forbidden by the law. If the enforcement of the law had been entrusted only to men particularly equipped for that kind of work, the percentage of loss would have been considerable less.

Of the 29 fatalities reported this year as a result of using powder, 14 were shot firers and 15 miners. Seven of the miners lost their lives in an ignorant and unlawful effort to prepare shots, which is an additional reason why some plan should be adopted that would entirely divorce the present class of miners from all connection with deadly explosives.

In the general classification of fatal accidents by causes appearing in table 79, it is noted that of the 183 fatal accidents this year, one-half, or 48.7 per cent, resulted from falling roof and coal at the working faces of rooms and entries. Mine cars account for 35, or six more than the use of powder. No amount of legislation can make absolutely safe the business of coal mining. The occupation, by its very nature, is hazardous, and accidents from one cause or another will continue to occur. In respect to the accidents resulting from falling slate and coal many of them are due to carelessness and therefore preventable.

The statement that "familiarity breeds contempt" is as

true of danger as of other things. Men whose occupations expose them to a certain class of known risks, become indifferent and are willing at all times to take chances. It is this association with dangers and the natural disposition of men that swells the totals of our casualty lists. As a means of protecting men from themselves, it has become the custom recently in certain coal mining districts for companies to employ what is known as face bosses, whose duty it is to visit men while at work and when they note any dangerous places to insist upon the miners propping them without delay. A very material reduction in the customary number of accidents from such causes in those districts has resulted, and the general adoption of such a practice in the state would doubtless have a most salutary effect. Men who have followed the business of coal mining know how natural it is for those who, while fully advised of a bad rock, in their eagerness to complete some other work, will defer propping it, only to be caught in its fall later on. If it only cripples him he becomes a charge upon his family and friends during recovery; if it proves fatal, a widow and perhaps a number of orphan children suffer and pay the penalty of parental carelessness.

TESTS OF REINFORCED CONCRETE BEAMS.

The resistance to failure by shear and diagonal tension and the effectiveness of metallic web reinforcement are discussed in Bulletin No. 29, "Tests of Reinforced Concrete Beams: Resistance to Web Stresses," by Arthur N. Talbot," just issued by the Engineering Experiment Station of the University of Illinois. In these 85 pages are given the results of tests made in the Laboratory of Applied Mechanics of the university. The strength and quality of the concrete itself are shown to have a marked effect on web stresses, and the importance of securing a high grade of concrete in beams subject to large web stresses, even if metallic web reinforcement is used, is brought out strongly. The results are given on which to base the design necessary to encase concrete to take shearing stresses. It is established that the less the ratio of span to depth of beam the greater the shearing resistance developed per unit of cross section, and also that the greater the amount of longitudinal reinforcement the greater the shearing resistance.

Both effects depend upon added stiffness, a relation which has not been formulated before. Several types of web reinforcement were investigated, bent-up longitudinal bars of different forms, unit frames, vertical stirrups of different sizes and proportions, smooth and deformed bars, etc. The notes and discussions given add to the value of the matter for those who wish to study the details of the tests. The analytical treatment of web stresses, the discussion of the experiments, and the remarks on proportioning stirrups may all be helpful to engineers. Although a considerable fund of information bearing on the part taken by the resistance of longitudinal reinforcement and the compressive resistance of concrete has accumulated, the data of web stresses are less definite and less complete. This monograph is therefore timely and it ought to take rank as an important contribution to the literature of reinforced concrete.

Copies may be obtained gratis upon application to the director, Engineering Experiment Station, Urbana, Ill.

CANADA'S GREAT COAL FIELD.

It has been estimated that the Canadian Northwestern coal field contains over 45,000,000,000 tons of marketable coal.

The New Castle, Tex., coal mines which closed down Feb. 19, on account of labor troubles have reopened.

COAL ANALYSIS

An Address Delivered Before the Illinois Fuel Conference at the University of Illinois, Urbana, Illinois, March 13th,
by DR. H. FOSTER BAIN, Director Illinois State Geological Survey.

Coal-bearing rocks underlie three-fourths of Illinois, including 85 of its 102 counties. The coal area is estimated at from 36,000 to 42,000 square miles—the largest area of bituminous coal within any single state. There are approximately 1,000 mines in the state, of which over 400 are railway shipping mines. The work of the State Geological Survey is therefore very largely devoted to coal and the problems of the coal fields.

Illinois ranks second among the states in the production of coal. In 1907 51,317,146 tons, having a total value of \$54,687,382 were mined. The figures for 1908 are not complete but preliminary estimates indicate that Illinois was almost alone among the states in holding its production. While in the country as a whole, the amount mined fell off from 15 to 20 per cent, Illinois mines produced as much as or possibly more than in 1907, a record year. Despite this gratifying fact it remains true that our mines are not working to anything like their capacity. In 1907 the average number of days worked was 218. It would probably be fair to assume 300 working days a year as possible. On this basis there was a loss of 30 per cent of the possible working time and this is not an unusual per cent of loss in our state. The reasons for this are complex. In part they lie in the nature of the coal, which prevents its storage without spontaneous combustion; in part, in the general ignorance as to correct methods of firing and the real value of the coal; and finally in part, in the present organization of the industry with excessive competition in selling. The net results are bad for the industry and therefore for the state as a whole. Cheap coal reduces manufacturing costs but allows wasteful burning. It also entails wasteful mining and even prevents the introduction of methods of safeguarding the men in the mines. It is a serious question whether we are not paying, in less of life in the mines, in loss of efficiency in our plants, and in loss of interest and capital invested in the industry, more than the cheapness of the coal is worth.

The Direction of the Work.

The study of the coal and coal fields of the state has been carried on both in the field and office. The work has been directed toward—

1. The solving of problems of stratigraphy such as the distribution and correlation of various coal beds, together with the collection of all data relating to the origin and the mode of deposition of the coal and accompanying beds.
2. A study of the composition and uses of coals.
3. A study of the mode of occurrence of coal as relates to the methods and costs of mining.
4. A study of the preparation of the coal for the market, its transportation, its normal markets, and the competitions which it meets.

The first step in the solution of the problems of stratigraphy is the making of accurate detailed maps and the compilation of drill records. This is now being done and considerable areas near Peoria, Springfield, Belleville, and in the Saline and Williamson county fields have been surveyed in co-operation with the United States Geological Survey. These maps show the thickness and lie of the coal beds and from them it will be possible to tell quite exactly how much coal is present and to plan its economical working.

At present it is only possible to guess at the original con-

tent of the field and these guesses vary from 136 billion to 240 billion tons. Either is perhaps sufficiently large for our comfort.

The study of the composition of the coal is directed especially toward the determination of its availability and the best means of using it. Samples are taken by uniform methods in the mine and in the market and in connection with the Engineering Experiment Station elaborate experiments are being made of the methods of storage, of handling the coal, and of burning it. We hope soon to take up the matter of gas production and coke making and have had under way for some time certain preliminary experiments.

The mode of occurrence as relates to mining methods and costs has been barely touched. In my judgment it would be well if the state made separate provision for this work. In the absence of special provision we are attempting to gather such notes as we can in the course of our regular work. "It has been found impracticable at the present time, mainly owing to limitations of funds, to undertake certain highly desirable studies of the technology of the mining industry and of the geographical distribution of markets for Illinois coals. It is believed that much good would result from investigations along these lines and that certain portions of the work are well within the proper field of the State Geological Survey. It is now well known that there is, under present commercial conditions, an enormous waste in the mining of Illinois coal. In individual districts it has been estimated to amount to as much as 60 per cent, though of course, such losses are not general. It would, however, probably be safe to say that in very many places 40 per cent of the coal in the ground is left unmined or is ruined in the process of mining.

Mining Methods Increase Small Sizes.

In addition, the methods of mining introduced in recent years have greatly increased the production of fine sizes and have also, seemingly, increased the danger to life and property in the mines. The causes for all these losses are complex, and it is not to be supposed that either operators or miners willingly submit to them. Neither is it to be expected that the losses of life and property can be entirely done away with. At the same time experience has abundantly proven that careful and impartial investigations of such conditions will point the way to the remedying of some at least of the abuses, and in view of the enormous importance of the subject to the state and the public at large, such studies are believed to be amply warranted.

There has been no opportunity as yet to seriously take up the study of markets. "The expansion of markets for Illinois coal is a matter of vital importance to the coal industry and indirectly to the people of the entire state. One of the most important means of promoting this expansion is by removing certain misapprehensions as to the quality of the coal and the pointing out of better means of burning, so as to increase its efficiency and decrease the smoke produced. This work has been taken up vigorously by the Engineering Experiment Station, which has published excellent bulletins on "How to Burn Illinois Coal Without Smoke," and other similar subjects. In addition to this valuable work, there should be investigations of the actual

markets for the different grades of coal and of possible enlargements of these markets. There are large areas to the northwest within which Illinois washed coals might profitably supplant eastern coals now being sold. There are other areas to the south and west where, with proper organization of transportation agencies, even in advance of improvement of the rivers, trade territory could be gained. Any widening of the market would be of large benefit to the local industry, particularly if the summer market could be increased. For this reason the studies now under way relating to weathering of coal and coal storage are especially important."

NET PROFIT ON BUSINESS— TAKE LOSS ON COAL

That the state legislature can compel the railroads of the state to carry one commodity at a loss, provided that the railroad makes a fair profit on their investment, on their whole business within the state, is the gist of the decision of the North Dakota Supreme Court in the famous coal rate case against the Northern Pacific railroad. The state, through former Attorney General McCue, asked for a writ of mandamus to compel the Northern Pacific to put into effect the rates on lignite coal which were fixed by the state legislature. The case went through the courts in due form and finally the Supreme Court acted. Their decision is:

1. That the law prescribing maximum coal rates for the transportation by common carriers of coal in carload lots within the state is not violative of Article I, Section 8, of the constitution of the United States known as the commerce clause, which confers upon congress the power "to regulate commerce with foreign nations, and among the several states and with the Indian tribes"; nor does it violate the fourteenth amendment of the federal constitution, nor Section 13 of the constitution of North Dakota providing, in effect, that no person shall be deprived of life, liberty or property without due process of law.

2. The legislative assembly possesses the undoubted power, under Section 142 of the constitution of North Dakota, to prescribe maximum rates for the transportation by common carriers of commodities between points within the state, provided the rates thus prescribed are reasonable.

3. The act in question is presumptively valid and the burden is upon the carrier to prove that the rates therein prescribed are clearly unreasonable.

4. Where the constitutionality of a law is made to depend upon the existence or non-existence of some fact or state of facts, the determination thereof is primarily for the legislature and the courts will acquiesce in its decision unless it clearly appears that such decision was erroneous.

5. Evidence examined, and held not sufficient to overcome the prima facie presumption that the rates prescribed by said act are reasonable.

6. The proper test as to whether the rates thus fixed are reasonable or unreasonable is not whether the rate fixed on the particular commodity is sufficiently high to enable the carrier to earn a fair compensation after allowing for the legitimate cost to the carrier of transporting the same, but whether under such rates, it will be enabled from its total freight receipts on all its intra-state traffic to earn a sum above operating expenses reasonably necessary for such traffic, sufficient to yield a fair and reasonable profit upon its investment. It is within the power of the legislature to reduce the freight on a particular article, provided the carriers are enabled to earn a fair profit upon their entire intra-state business.

COLOMBIAN COAL FIELDS AND PANAMA CANAL

The Colombian coal fields are exceedingly well placed to take advantage of the markets which will be made available by the opening of the Panama Canal. There are at present three routes by which the coal can be sent to the canal: (1) From the Rio Hacha and Santa Marta fields to Colon, across the Caribbean Sea, 500 miles; (2) Darien to Colon, 300 miles; (3) Buenaventura, on the Pacific, to Panama, 400 miles. When the mouth of the Magdalena is opened for steamers and the navigation of the river improved coal may be exported by this additional route.

In the absence of any assured statistics, it is not possible to give even an approximate computation of the Colombian coal deposits, but the country has in its extensive coal fields a valuable asset, almost untouched, and very little explored, the mines that have been opened being worked in a very superficial way; the unsettled conditions which have prevailed in the republic having halted progress in this connection. No geological survey has ever been made of the Colombian coal fields.

The known coal measures of Colombia are given as follows (1) Bogota coal fields; (2) Tequendama, south of Bogota; (3) Zipacon, west of Bogota; (4) west side of the Magdalena; (5) Subachoque, near where the Pradero Iron Works are established; (6) Cajica; (7) government mines at Yapaquira, where there are large beds of rock-salt; (8) Nemocan mines, private and government; (9) Sequile and Guatavita; (10) Sueboa; (11) Pacho Iron Works and coal deposits; (12) outcrops at Ubaté, Fuquene and Valez; (13) Tunja, Sogamoso, Santa Rosa de Viterbo and Gambita; (14) department of Santander; (15) Cucuta district; (16) Magdalena district; (17) Santa Marta district; (18) Llanos; (19) Popayan; (20) Cali, to be operated by the Pacific Railway; (21) between Cali and Cartago, and in the Cauca Valley, not of Cartago; (22) Choco and Darien.

The means of communication in Colombia are inadequate. There are 12 short railways, none of them over 70 miles in length, and all were planned without regard to coal export, although it happens that several of them traverse coal fields. The navigable rivers are only suitable for vessels of light draft. The lower Magdalena is navigable for about 600 miles, and the upper river, at times, for about 100 miles. Nevertheless, means of communication could, no doubt, be provided when a coal mine of known richness and an assured market need to be connected.

There is no demand at present for coal-mining machinery in Colombia, but upon the completion of the railways now in course of construction there should be a limited market for all classes of machinery for mining and handling the product. Communications covering all the known information relative to the Colombian coal fields, together with maps of the 12 routes and coal distribution, photographs, etc., transmitted by Consul-General White, are on file in the Bureau of Manufactures, to which the above information was furnished by Consul-General Jay White, of Bogota.

WALSH COAL PROPERTIES SOLD.

Twenty thousand acres of coal lands, formerly the property of John R. Walsh and the J. K. Seifert Mining Company, in Sullivan and Greene counties, Indiana, were sold at public auction in Terre Haute by Master in Chancery Daniels on the order of Judge Landis. The only bidder was the Equitable Trust and Savings Company of Chicago and the property was knocked down to it for \$1,500,000.

INSTALLATION OF ELECTRICITY IN MINES

A Paper Read Before the American Mining Congress in Pittsburgh, December, 1908, by W. A. Thomas, Commercial Engineer.

It is not the intention of this paper to dwell upon the general subject of the use of electricity in mining operations, but to deal more particularly with the manner of installation and operation of electric conductors and apparatus in underground mine workings. While the suggestions offered can readily be applied to the general mining work, they are made with more particular reference to the coal mining work, in connection with which the matter of precautions for the safety of the employes and property is being given careful consideration at the present time. It is sometimes difficult to account for conditions which have become more or less permanent. The mystery with which electricity has been regarded has led to the custom of attributing to it the responsibility for many actions simply because they could not otherwise be accounted for. "Defective wiring" had long been the reason for fire in buildings even though leaky gas pipes or oil lamps may have been a factor in many cases.

In like manner has electricity been blamed for accidents in coal mines, where many other causes might as consistently have been found. In some states the attitude of the inspection department has been thought to be hostile to the use of electricity in the mines, but it is more reasonable to believe that decisions which appear unfavorable are the result of a failure to comprehend fully the results to be expected from a given set of conditions. In the sincere effort of the leading operators to determine precautionary measures for the safety of employes, the question arises what, if any, are the limitations to be placed on the use of electricity in the coal mines. In like manner, the various commissions appointed to investigate the question of mine laws and regulations to safeguard the lives of employes in mines, are confronted with the same question.

It is fully recognized by mine owners and operators that some attempt at uniformity in methods should be established regarding the manner of installing electricity. This would have many beneficial results, important among which are, first, a better understanding on the part of men doing installation work or just how it should be done. Second, a more careful study would be made to determine the best practice to follow under a given set of conditions. Third, a uniform system of installing would train the miners where to look for danger and what to expect in the way of results from certain uniform causes. Electricity has come to play so important a part in the production of coal that most careful consideration should be given to the question before establishing many "Thou Shalts" and "Thou Shalt Nots" which may or may not have the desired results. The treatment of this question to date has been widely different in different states, but it was hoped that the conference of governors of many coal producing states in Pittsburgh early in December would result in a more uniform and satisfactory method of solving the question for all conditions. It is recognized that many of the suggested changes in method of mining must necessarily increase the cost of producing coal and to adopt these changes in one state and not in another must necessarily work to the disadvantage of the industry in the state making the most reforms. The conference, therefore, of the various governors of coal producing states will doubtless be of far-reaching benefit to the industry.

In Ohio the inspection department it is understood prepared and presented to the legislature and has established certain rules with reference to installing and operating electrical apparatus, which in their mind would prove effective in safeguarding men and mules in the mines of that state. Once established these rules were found to be ineffective and inoperative. In fact, the enforcement of some of them would render the mines in most cases more dangerous from other causes; for example, the cutting of a groove in the roof deep enough to bring the trolley wire even with the roof. Discretionary power was then given the inspectors in the matter of enforcing certain of the rules. Such a condition always gives rise to a difference of opinion, and leaves room for the fear of discrimination. The question is now being considered by a commission appointed from the ranks of the inspection department and of the operators to settle upon just and consistent measures which can be made effective.

In Pennsylvania there have been no rules of consequence as applying to electrical installations, except in the matter of the use of gaseous mines. There has been a commission appointed by Governor Stuart for the revision of the bituminous mine laws and they are considering carefully a set of rules to govern the installation and operation of electricity in bituminous mines. It is unofficially reported that the rules of the government of New South Wales are being used as a foundation around which to formulate rules to apply to Pennsylvania conditions.

The commission is composed of inspectors, coal operators, and, one representative of the miners' organization. They have consulted frequently with electrical engineers from the mines and from prominent manufacturers of electrical apparatus for mine work and consulting electrical engineers, and if the advice of these men be followed the rules cannot but be beneficial in arriving at the desired ends.

In West Virginia apparently no definite rules have been established to govern the use of electricity, but the operators appreciate the desirability of establishing standard methods and practices in new installations.

W. H. Keller, chief electrician of the New River Collieries Company, in his paper before the West Virginia Mining Association, at Charleston, W. Va., October 7th, dealt with this subject in an able and skillful manner. Mr. Keller pointed out that the inspection department should be skilled in electrical matters in order to render decisions which would be fair and consistent. He also brought out the fact that the next step would be the establishment of rules and standards to be applied to all mines of the state. To use Mr. Keller's words:

Standardizing of methods and materials, and laws governing same, has the effect, (1) of reducing to a minimum the danger to life and limb; (2) of educating the employe to a more systematic method of performing all kinds of work and obtaining from him the highest efficiency; (3) of enabling the owner to operate his plant with a minimum investment in spare parts; (4) permitting the operators to contract for material in quantities at an attractive price.

If the mining department employed skilled and experienced electrical men, competent to judge in matters of this kind, it would even then be difficult to render just decisions without some general rules which were recognized as standard.

If this is true, how, then, under the present conditions, can the mining department expect, with justice, to govern the use of this most important factor in the greatest industry in our state?

If I were to offer a few general rules governing the installation of electricity, I would offer as a safe voltage anything up to 600 volts direct-current.

In making specifications it is not within the province of the electrician alone to decide which mines should or should not have electric installations, but mines should be classified as follows:

(1) Gaseous mines in which the volume of inflammable gas generated is such that no electrical equipment except signal and telephone lines carrying not over 20 volts may be installed.

(2) Gaseous mines where the volume of inflammable gas generated is so small that it may be good practice to install safety lamps and safety powders, but will not preclude the installation of electric haulage, electric pumps on the entries, and mining machines and gathering locomotives in rooms when the power is transmitted from the haulage entry to the machine or gathering locomotive over a well, insulated single or twin conductor cable, the exposed wiring and main haulages being principally in the intake airway.

(3) Non-gaseous mines, where electric machinery operates with direct current, 600 volts or less may be installed.

Having decided the questions of installing power, a few rules, as follows, would put the equipment in safe condition. I may say a safe condition; that applies to the general run of men. I have seen a few fools who touched the wire charged with various voltages just to see what they would do.

Tracks should be bonded in an approved manner and regularly inspected to see if bonds are in place; should be cross-bonded every 200 feet; should be cross-bonded around switches. Where water, air or steam pipes parallel tracks, they should be bonded to track, and pipe should be bonded around flanged joints. This not only helps the return circuit, but prevents electrolysis. If it is necessary to use a return wire in addition to the rail, the wire should be connected to the cross-bonds by an approved connector.

No permanent wire, either feed or trolley, transmitting 600 volts or less, should be insulated, as the mine-air soon affects the insulation, so it does not insulate. Men are liable to be deceived—believe they are handling an insulated wire. It is better to teach men to keep hands off all wires.

Trolley wire should be erected at a uniform height from the rail and a uniform distance, about six inches, outside the outer edge of the rail. As a guide to men traveling on the main road, lights should be placed and maintained every 200 feet, to show which side of the entry supports the trolley wire.

Where trolley wires cross the main heading they should be protected by an inverted wooden trough, and lights put at both ends of the trough.

Switches should be of an approved type in boxes.

Each motor and locomotive should have an inclosed copper-wire fuse on the main circuit.

Pump motors, fan-motors, car-haul motors, rotary converters or any other form of stationary motors should have the frame grounded in an approval manner.

Controller frames on electric locomotives should be grounded to the locomotive-frame.

Lightning arrestors should be placed at the entrance of the mine.

All high tension insulated cables should be provided with static arrestors, or have steel or lead covered cables grounded.

Where mining machines or drills are used in rooms, the

frame of motors should be grounded to the frame of the machine, and the machine connected to the return circuit.

Where it is necessary to install wires in rooms, have an approved automatic cut-out, or switch, and have installed in the rooms, in view of miners, two lamps in multiple.

All roads over which locomotives operate should be kept clean down to top of the ties, and drained.

Where mines are ventilated by electric fans, the alarm should be so arranged in the power house that when the fan stops the power house engineer will get a signal. If the mine is gaseous, he should have instructions to cut power of the mine at once, and immediately start an investigation as to the cause of the fans stopping and, if it cannot be immediately started, notify the mine foreman, so that men may be gotten out as soon as possible. Too many automatic devices create a degree of carelessness that must be avoided.

As much as possible, fan circuits should be separate from all other circuits inside or outside the mines. Starting devices should be arranged to either automatically start the fan in the house or have the power house engineer start it in the power house.

The remedy lies not in the prevention of the installation of electrical appliances—for electricity is an important agent in the coal industry—but in regulating the installation of same. Regulations and standards should be adopted, but only after thorough investigation by men of training and experience.

The three foreign mining experts, Messrs. Watteyne, Meissner and Desborough, who were requested to investigate conditions in our mines, were present at the meetings when Mr. Keller delivered his paper. Their report is now published in the form of Bulletin No. 369 by the United States Geological Survey, from which the following is quoted:

"Electricity in mining operations offers so many advantages, and has been so generally adopted, that no reasonable objection can be made to its use under proper restrictions. The electrical equipment, however, should be installed, maintained and operated with great care, and so safeguarded as to minimize danger from fire or shock. The fact that the effectiveness of some insulating materials is soon destroyed in most mines should not be lost sight of.

They recommend 650 volts direct current and 500 volts alternating-current as a limitation of voltage for underground distribution of electric power.

This is in line with the New South Wales rules, and seems to meet with favor both in the United States and Mexico.

Similar discussion and action seems to be going on in Mexico, and it is probable that rules will shortly be established there by the government to guide the operators and inspectors in the use of electricity in all classes of mining work.

A careful study of the New South Wales rules shows that a great many regulations deal with probabilities of defects in the insulation of feeder wires. The experience of mining men in the United States seems to be general in finding a greater degree of safety in using bare feeders which are known to all to be alive, and to be let alone by other than those men whose duty it is to see them.

In the use of insulated wires in the average mine they are safe to touch and handle until such time, and short it is, too, when the insulation becomes damaged and then, like "the gun that was not loaded," they become dangerous with careless handling.

It is unquestionably better practice to use bare feeders up to 300 volts, and, until some insulation is developed commercially that will withstand mine water better than the present rubber-covered wires, 500 to 600-volt feeders should

preferably be installed bare, and so located as to guarantee the greatest amount of safety.

In general, it is recognized that electricity as a motive power has come to stay in the mines of the United States, and it is desirable that more uniform practices be obtained and a greater degree of skill employed in its use and in deciding questions of moment pertaining thereto.

Coincident with the adoption of uniform standards in installation and operation, steps should be taken to provide the state mining departments with men especially skilled in the use of electricity in mines.

The action of the Technologic branch of the United States Geological Survey in endeavoring to obtain the most skilled man possible to assist in their investigations is one which could with profit be followed by the state mining departments. The Federal government cannot render too much aid in the researches now being made. On the other hand, the States should be equipped with the best talent possible to interpret these results, and to apply them to everyday decisions in the field where they are endeavoring to safeguard life and property.

WHAT IS A GOOD SUBSCRIBER?

A Talk Made by ARTHUR L. RICE, Editor of the Practical Engineer, Before the Chicago Trade Press Association, Tuesday Evening, April 27th.

Evidently "good" in this connection does not refer to lack of vices, to patriotism, or an interest in the good government of one's city, and yet I contend that a good subscriber should have sufficient conception of the ethics of life so that he will pay for his subscription, otherwise he is evidently no good.

I presume the majority of us, at first propounding of such a question, would express the opinion that a man who subscribes for the paper, pays his subscription promptly, renews promptly when notice is sent him, and with his renewal sends in a glowing testimonial patting the editor on the back for his good work and expressing in all sorts of flowery language his appreciation of the merits of the paper, would be considered as a dandy.

Testimonials are very pleasing things to get. They run all the way from such as was sent to Charles Dana, saying that "I attribute my bodily and mental vigor entirely to my regular reading of your esteemed journal, the New York Sun. I have read it every day for 25 years. I read it every evening, then go early to my well-earned rest, and have not failed of a sound night's sleep in all that time," down, or up, as you may choose, to the one who, with exhaustive fulsomeness, states that "I would not be without your——— for 5 times the cost. I read every number from cover to cover. My April copy has failed to come. Please send another with bill, as I do not want to miss it."

Now the former kind are such as one may not exactly view with alarm, but keeps for private consumption, while the latter are extremely convenient when getting up subscription circulars and advertisements, but is the subscriber who strokes your fur the right way and makes you feel complacently that you are doing the world a great service a really good subscriber?

The simile which is suggested by our recent prandial activity is that, on the one hand, this man is very like an indulgent parent who caresses and coddles without any thought of the welfare of the child, and, on the other hand, is very much like a cat, whose sole purpose in life is to be cuddled and fed. The taffy kind of a letter never stirred an editor up to do anything worth while doing. After receiving several of that ilk in the morning's mail he is likely to go out and eat a hearty luncheon, spend too much time on it, and do abominable work for the rest of the day; and certainly the subscriber whose sole activity is to absorb what he can get from the reading pages is of mighty little value to the business department of the organization.

Opinions differ, which is fortunate, as this is what makes horse racing possible, but what I want for a good subscriber is a live reader who will applaud good work when

it is worth applause, who will criticise bad work and be always alert and alive to the best interests of himself and his field; who will catch errors of the editorial department and will question statements that are open to question. With such a man there will be no difficulty about his subscribing for the paper, if it is the right kind of a paper, and there will be no trouble about his paying for a paper that is worth his while. He will keep me from getting lazy and careless about editorial work. He will be looking for new ideas and will, therefore, be open to the suggestions of advertisers and will read, or at any rate will look over, the ad pages, and we might as well get right down to hard pan and acknowledge among ourselves that the only good subscriber is the man who reads the advertising pages and who has the ability to buy or to direct the buying of the advertised goods.

Advertising is the foundation on which we build our publishing business and the only real use that a subscriber can be to the publisher is to buy things of the advertiser. This has nothing to do with the function of the editorial department, but it is ordinary business sense, and the sooner we come to realize that a list of 50,000 Piute Indians is absolutely useless to an advertiser or that 500,000 housewives is an absurd list for an advertiser of power plant machinery to talk to, the sooner we are going to start on the right road for building up our subscription lists; and the more plainly we can show to advertisers in trade papers the truth of these facts the more likely we are to keep them advertising on sane and sensible lines.

I remember a statement made by E. P. Harris before a joint meeting of this association and the Space Club, that every word written for a trade paper is for the sole purpose of getting advertising. I confess that when I heard the statement it went against my grain and I did not at all agree with him. The more I think of it the more I am inclined to agree absolutely.

In this connection an interesting suggestion was made recently in a house organ, one of the convenient little pocket edition variety which is gotten out by some fellow who has a knack of catchy writing, the main body of the pamphlet being made up of miscellaneous observations on any topic whatever without any regard to its appropriateness to the field in which it is sent, and in the front, at the back and probably a double page in the middle, are stitched in from 2 to 8 pages of advertising cuts with a few lines of description, and this sort of thing is sent out as advertising. I am not prepared to take a stand in toto against the house organ. Like trade papers, they are good, bad and indifferent, but this particular style of house organ makes me want to go

into the wood-shed and blow off steam whenever I run across a new issue because it is such an absolute absurdity. This has nothing whatever to do with the matter of subscribers. It is simply a side issue, and I feel better for having said it.

The particular house organ advertiser referred to opined that the basis on which all trade papers were built was to cater to the vanity of the advertisers, who are also the subscribers and each of whom pays his money to "tell his competitor that he is in the business, and subscribes for the purpose of being informed of that fact himself, all of which they all knew before the enterprising journal was ever started, and all of which is not worth the paper it is printed upon to any of them." He then goes on to set forth how much money the advertiser wastes by putting his ad into competitive papers in the same field and suggests the starting of a trust paper in the field in which he is particularly interested, although he obviously intends the idea to apply to all fields, which paper shall be owned by the advertisers and the subscribers, and he wishes to pledge all advertisers to advertise in no other paper but that one. This brings up a vision of the Ivory House Cleaner Co. and the Gold Dust Cleaner Co. engineering the election of the board of directors that control that paper, the winner to elect the manager and the editor who shall decide what goes into the paper. Also the vision of the poor editor, who is trying to sail a straight course with his hair parted in the middle, between two large advertisers who own equal amounts of stock in the paper, who are trying to cut each other's throats because of a trade war and each of whom is determined to have a little more advertising space or a little more space devoted to writeups than his competitor. If the position of editor on that paper were offered me, I should decline, preferring to go to the Panama Canal to dig dirt.

Another interesting statement which he makes is this: "Publishers of technical periodicals are becoming rich." He did not say all publishers, otherwise I should be inclined to challenge him to bring forth something to prove his statement, but he implies the "all" by not saying "some" and I think the experiences of the last year will make us inclined to take the Missouri attitude towards that statement.

And again he makes this statement: "Out of every \$300 received by technical trade journals from their advertisers one hundred of those dollars are spent in obtaining the advertisement, and this expenditure is due to the competition of other journals for the advertisers' trade, and we, the advertisers, are the suckers who are paying for all this, and who will continue to pay for it until we get together."

I venture to say that a trade journal which is paying 33⅓ per cent of its advertising receipts for the getting of contracts is on the high road to financial ruin. If we could have an executive session where every man would open his heart and we could all benefit by each other's experiences, I would suggest that a profitable evening might be spent on this question of what proportion of cost is properly incurred in the getting of a contract. This will vary, of course, with different fields, but it would seem plausible that papers in the power plant field and those in the railway field and those in the electrical field should all come somewhere near to the same average in their expense of getting contracts if the business is well managed.

Getting back strictly to my topic, evidently that paper is of the best value to the advertiser which has the biggest lot of good subscribers, good subscribers being those who do read the paper, both editorial and advertising, and who have purchasing power.

The next question in the series is, of course, how shall we get these good subscribers. The need of good editorial

work in this was thoroughly emphasized at the last meeting, and we need not dwell on it. This will evidently get subs., because, if a paper is so good that a man feels that he needs it in his daily work he will subscribe for it; but this does not discriminate between the good and the bad.

Evidently all the subscribers you get cannot be good subscribers, because you *must* take a man's subscription so long as he puts up the subscription price. Then we have the problem of changing him over from a bad subscriber to a good one, and that is a part of the business of the paper. It is largely a matter of training. It is just as much the job of the editor to make bad subscribers into good ones as it is of the carpenter to produce from a rough oak log a beautiful piece of carved work, or a blacksmith to produce a useful horseshoe from a piece of rusty iron, or the breakfast-food manufacturer to produce a palatable article from a stack of alfalfa hay, which is now reported to be one of the industries of the great Northwest. Just as the skilful worker can produce these results from unpromising material, so the right spirit in the editorial department will hold subscribers, will train them in alertness and will give them the spirit of progress, which will make them become animated question marks when reading, and keep the editor hustling with questions and the advertiser happy with inquiries.

The advertising department has its share, however, in making a good subscriber out of unpromising material. If the copy department and the composing room make the ad pages so attractive as to material appearing there and appearance that readers will like to browse those pages, the returns of advertisers will be greatly increased. If the advertising pages are forbidding or stale and trite, the subscriber is justified in skipping them. They have no business to have a forbidding aspect or to be dry and unattractive, any more than have the editorial pages.

I remember that the first thing which started me to reading the advertising pages of magazines and periodicals was the series of funny pictures, perhaps alleged funny pictures might be better, which appeared, and I think still appear, among the advertising pages of Scribner's Magazine, and I am meditating whether that is a good proposition for a serious-minded trade paper to adopt or not. Possibly, too, we might make preferred space in our advertising pages by running a column of jokes down the middle of an advertising page. These may sound like circus poster propositions, but the job of the manager of a trade paper is to get business and bring returns. He does not need to use yellow journal methods to do this, but any new feature which will wake up the subscriber, and teach him to look upon the advertising pages as part of the information fund which his paper furnishes him, is legitimate and is worth considering.

In getting subscribers to a class or trade publication, obviously the subscriber outside the field to which the paper caters is dead wood, and the lists which are used for sending sample copies and for circularizing should be carefully selected, and canvassers for subscriptions should be held strictly up to a certain standard in their work, and if they take subscriptions haphazard without regard to occupation they should be called to account quickly.

A man in the field who is in position to rise and get to the point where he will have purchasing power is evidently good timber for making into a good subscriber. He may have purchasing power in one year or in five years; so long as he has the possibility of getting it he is good material. But the adding of one more name to the subscription list without regard to the kind of man who is to get and read your paper, simply for the sake of swelling circulation, is mighty poor policy and if persisted in is bound to result in dissatisfaction of the subscriber with his bargain and of the advertiser with his results.

RAILROADS GAINERS BY HIGH COURT DECISION

The Supreme Court of the United States last Monday rendered its long expected decision on the "commodities clause" of the Hepburn interstate commerce act, the interpretation being a decided victory for the railroads. As a matter of fact the railroads can hardly find an objectionable clause in the decision, if they hunt for it. They can retain their interests in producing corporations and still confine themselves strictly to the business of transportation. The interest need not be limited at all. The only power left to the commodities clause is to detect and stop rate discriminations in favor of the railroad producing corporations. That portion of the decision applying to a railroad company's right to own stock in a different corporation was dissented from by Justice Harlan, but otherwise the decision was unanimous. It was read by Justice White. Following is a summary of the opinion:

"1. The claim of the government that the provision contained in the Hepburn act approved June 29, 1906, commonly called the commodities clause, prohibits a railway company from moving commodities in interstate commerce because the company has manufactured, mined, or produced them or owned them in whole or in part or has had an interest direct or indirect in them, wholly irrespective of the relation or connection of the carrier with the commodities at the time of transportation, is decided to be untenable. It also is decided that the provision of the commodities clause relating to interest direct or indirect does not embrace an interest which a carrier may have in a producing corporation as the result of the ownership by the carrier of stock in such corporation irrespective of the amount of stock which the carrier may own in such corporation, provided the corporation has been organized in good faith.

"2. Rejecting the construction placed by the government upon the commodities clause, it is decided that that clause when all its provisions are harmoniously construed, has solely for its object to prevent carriers engaged in interstate commerce from being associated in interest at the time of transportation with the commodities transported. Therefore the commodities clause only prohibits railroad companies engaged in interstate commerce from transporting such commerce commodities as have been manufactured, mined, or produced by a railway company or under its authority, and at the time of transportation the railway company has not, in good faith, before the act of transportation, passed with its interest in such commodity; when the railway company at the time of transportation has an interest direct or indirect in a legal sense in the commodity.

"3. As thus construed the commodities clause is a regulation of commerce within the power of congress to enact. The contentions elaborately argued for the railroad companies that the clause if applied to pre-existing rights will operate to take property of railroad companies and therefore violate the due process clause of the fifth amendment were all based upon the assumption that the clause prohibited and restricted in accordance with the construction which the government gave that clause, and for the purpose of enforcing which prohibitions these suits were brought.

"As the construction which the government placed upon the act and seeks to enforce is now held to be unsound and as none of the contentions relied upon are applicable to the act as now construed because under such construction the act merely enforces a regulation of commerce by which carriers are compelled to dissociate themselves from the prod-

ucts which they carry and does not prohibit where the carrier is not associated with the commodity carried, it follows that the contentions on the subject of the fifth amendment are without merit.

"4—The exemption as to timber, contained in the clause is not repugnant to the constitution.

"5—The provision as to penalties is separable from the other provisions of the act. As no recovery of penalties was prayed, no issue concerning them is here presented. It will be time enough to consider whether the right to recover penalties exists when an attempt to collect penalties is made.

"6—As the construction now given the act differs so widely from the construction which the government gave to the act and which it was the purpose of these suits to enforce, it is held that it is not necessary, in reversing and remanding, to direct the character of decrees which shall be entered, but simply to reverse and remand the case with directions to enforce and apply the statute as it is now construed.

"7—As the Delaware and Hudson Company is engaged as a common carrier by rail in the transportation of coal in the channels of interstate commerce, it is a railroad company within the purview of the commodities clause and is subject to the provisions of that clause as they are now construed."

Claiming that the principle contended for by the government had been sustained by the Supreme Court of the United States in its opinion in the "commodities clause" case. Attorney General Wickersham tonight authorized the following statement, interpreting the decision as he understands it:

"The recognition of the power in congress to extend transportation to commodities mined, manufactured, or produced by a company in which the carrier is a stock owner makes it possible for congress by further legislation to prevent an evasion of the general prohibition of the statute which might otherwise be resorted to. In other words, as I understand the opinion, it is to the effect that the question whether or not a carrier is prohibited from transporting goods which it has produced or owned depends upon whether it owns or has an interest in them at the time of transportation. If it has, then the commodities clause prohibits the carrier from so transporting, although if that ownership is only the indirect interest resulting from owning capital stock of a corporation which owns the goods that fact does not operate to prevent it from transporting.

"The decision does not sustain the full contention of either the government or the carriers. It adopts a construction of the statute different from that contended for by both the government and the carriers. It however, sustains the principle contended for by the government that congress has power to prohibit a carrier from carrying in competition with other shippers commodities which the carrier owns or in which it is interested. It operates at once to prevent any carrier from transporting any commodity which it owns at the moment of shipment, and it confirms in congress power to extend that prohibition to the carriage of commodities owned at the time of shipment by a corporation in which the carrier has a stock interest."

Coal-Carrying Roads Unaffected.

The coal carrying railroads will be practically unaffected in their business by the decision of the Supreme Court of the United States in the commodities case. This

is the opinion of Robert W. De Forest of this city, who was associated with John G. Johnson of Philadelphia as counsel for the companies in the argument of the cases before the court. Mr. De Forest says that of the anthracite carriers only two, the Delaware, Lackawanna and Western and the Delaware and Hudson, have any direct legal ownership in the anthracite coal. Both these companies are authorized by their charters to mine anthracite coal and to transport it. The latter sells its coal only at the mines.

The western roads do not own their coal mines directly, so that they do not seem to be affected.

There is already talk of revived agitation in congress and a new measure to force railroads to be carriers only.

OPPOSE INTERNATIONAL LABOR UNIONS.

The interference of American labor organizations in Canadian industrial affairs is severely censured in the majority report presented to the Labor Department by the Board of Conciliation and Investigation, which has concluded an inquiry into the dispute between the Dominion Coal Company and its men, relative to the refusal of the company to recognize the American Mine Workers' Union. The report, which is signed by Judge Wallace of Halifax, finds that the company was justified in its refusal to recognize international unionism, on the ground that it could not deal with two labor organizations at the same time, namely, the Provincial Workmen's Association and the United Mine Workers' Union.

"Without presuming to dictate," say the commissioners, "to which union the men should belong or as to whether they should belong to any union, we think it is to the interests of the operators, the men themselves, and the whole community that our labor difficulties, which will always be with us, should be settled among ourselves, and not be subject to the control of any outside party."

GOULDS TO GO INTO COAL BUSINESS.

Within an hour after the Supreme Court decision on the "commodities clause" was rendered news was received from Pittsburg that a deal had been consummated by which the Gould interests will engage in the coal business in the Pittsburg district. Arrangements already have been made, it is said, to produce between 2,000,000 and 2,500,000 tons a year. The mines will be operated by the Pittsburg Terminal and Coal Company, and the coal will be sold at the mines through a New York concern. The deal was made some days ago, however, when the Pittsburg Coal Company relinquished its leases of the Gould coal lands.

PITTSBURG COAL COMPANY REORGANIZATION.

A radical reorganization of the official family of the Pittsburg Coal Company, as a result of the resignation of Walter R. Woodford as first vice president has been announced. The board of directors has elected five vice presidents of the corporation, instead of having but two. These are the new officers:

First vice president, C. E. Wales, who will have charge of the northwest and lake coal trade of the company.

Second vice president, F. M. Wallace, who will have charge of the financial and accounting departments.

Third vice-president, George M. Hosack, in charge of the operating mines.

Fourth vice president, J. W. Walsh, in charge of the sales department.

The fifth vice president, in charge of traffic and transportation, has been selected, but his name is withheld pending some formalities, and will be announced in a few days. It is stated, however, that the new officer is a railroad man

of prominence and will be a strong addition to the company's executive staff.

Of the new officers, C. W. Wales was second vice-president and acting in that capacity with Mr. Woodford. F. M. Wallace has been treasurer of the company. George M. Hosack has been assistant to the president, and J. M. Walsh has been manager of sales of the company. In the past, the duties of Mr. Wales, Mr. Walsh and the new vice-president in charge of traffic and transportation were performed by the first vice-president.

James H. Woods has been appointed assistant general sales agent, office at Cleveland, O., Louis H. Washburn is made eastern sales agent, office at New York, and the arrangement under which B. Nicoll & Co. have been representing the Pittsburg Coal Company is discontinued.

DULL DAYS AT DU QUOIN.

A letter from Du Quoin, Ill., says that from present indications the coming summer will prove the most disastrous in several years for the coal industry of southern Illinois. Already a number of the heaviest producing mines in Saline, Franklin, Williamson, Jackson, Perry and Washington counties have suspended operations, and others are expected to follow. On April 1 the Illinois Central Railroad did not renew its annual contracts with the various coal companies in this section, the supply on hand being sufficient for the consumption of that road for several months. Practically none of the mines are now working more than one-third time now.

WEST VIRGINIA MINERS' CONCILIATORY.

The special convention of the United Mine Workers of District No. 17, held in Charleston, W. Va., adjourned after adopting by unanimous vote a resolution granting to all the operators working under the joint agreement of 1908, the terms of the Paint Creek settlement, made by President Davis last winter to settle the strike in that field. By adopting this resolution the miners believe they are acceding to the demand made by the operators at the convention held in Charleston last winter, for relief from the terms of the 1908 agreement. The miners agree to take the long ton, and demand in return the check-off, or recognition of the union.

The United Mine Workers of America in the seventh district with headquarters at Hazelton, Pa., now number 6,993, which is the largest membership since 1902.

DRILL FOR SALE

Prospecting (Churn) Drill—Little used and in good order—for sale cheap. Address—D. Fuel.

BOX CAR LOADER FOR SALE.

A new Ottumwa Electric loader, used but little, in good order, for sale cheap. Address, "B. C. L." care Fuel.

The J. B. Sanborn Company
PUBLISHERS OF

The Coal Dealers' Blue Book

Pennsylvania Bldg., Philadelphia. P. O. 324 Dearborn St., Chicago.

Contains complete list of Wholesale and Retail Dealers in Coal; Miners
Shippers and Manufacturers of Coal and Coke, together with
Capital and Rating of
each. Details on application.

BOGUS SCIENTIST PULLED AND VICTIMS PUT WISE

Clever detective work and prompt action on the part of the police of Oakland, California, prevented a bogus geologist of the United States Geological Survey from fraudulently collecting and making off with a possible couple of thousand dollars. D. P. Coble, possessing several aliases and hailing from Vancouver, B. C., has confessed to the authorities that he thought it would be a simple and easy way to outfit himself for a trip to Mexico by stopping in Oakland and engaging a number of young men for United States Geological Survey work in Alaska during the coming season, requiring them to deposit with him \$65 each as a guaranty that they would not quit the service. He therefore opened an office in Oakland, hired a stenographer, had \$25 worth of work done in printing Geological Survey letterheads and elaborate blanks, forged several cleverly written letters addressed to himself from the director of the Survey showing his authority to hire young men for government service, and then inserted an advertisement for such young men in the Oakland papers. He was well prepared to carry out the game.

Oakland detectives were on the watch for just such confidence schemes, however, and a member of the "force" applied for one of these Alaskan jobs at "\$60 a month and found." Then followed a little quick communication between the Oakland chief of police and the San Francisco office of the Geological Survey, and also the Director of the Survey at Washington. In the meantime the applicants for the Alaskan positions were many and Coble was evidently expecting a rich haul for his three days' work. Thirty applicants were to report on Tuesday and clinch their places

by depositing with Coble \$65 each. If they hadn't the sixty-five handy, but could raise \$25, for instance, he would, he had stated, personally advance the difference against the applicant's future salary. To lend color to this scheme he had a forged letter from the Director of the Survey and also blank expense checks against salary account. But by Monday the mesh had been sufficiently tightened around the enterprising but unsuspecting Alaskan promoter, and he was unceremoniously arrested and, after a brief hearing, jailed, thus indefinitely postponing his Mexican trip. His offense is stated to be punishable by \$1,000 fine or three years' imprisonment, or both, and he is being held for the action of the Federal Grand Jury.

The only people, it appears, who are out of pocket in the matter are the stationery printers and the stenographer. The typewriter purchased on approval for the Alaskan work and the reservation of ten steamship berths for the Alaskan applicants were recovered and canceled respectively.

WILL SOAK THE COAL COMPANIES.


With the view of taxing coal lands their full value and to raise the assessments of the big companies to a valuation of \$20,000,000, the county commissioners decided to employ mining engineers to appraise the coal lands about Pottsville, Pa. John H. Struch, of Pottsville, will be one of the experts.

GOOD COAL IN LOUISIANA.

C. E. Sellers, secretary and treasurer of the Lafayette-Crowley Oil and Mineral Company, reports the coal vein struck at Estherwood, La., at 250 feet from the surface being a fine hard coal, and the drill went through thirty feet of coal; that there are four feet of rock and slate over the coal, which forms a substantial roof to work the mine.

T. N. KOEHLER, Pres. F. A. KOEHLER, Secy.
Wilmington Coal Washing Co.
 293 Dearborn Street.
 Works: BRACEVILLE, ILL. Harroden 2407. CHICAGO

MISSOURI & ILLINOIS COAL CO.
 MINERS OF
TURKEY HILL & CARTERVILLE COAL
 Office 407 North Broadway ST. LOUIS, MO.

 A 1 H.P. Gasoline Engine for \$55.00
BRUNNER'S WINNER No. 2
 ready to spark when you get it
 Other Gasoline Engines up to 30 H. P.
 Write to the Manufacturer
CHARLES BRUNNER, - Peru, Illinois

NEW CENTRAL COAL COMPANY
 OF MARYLAND, Miners and Shippers of
Fairmont West Virginia Steam and Gas Coal
 Suite 419-420, No. 17 Battery Place. - - - - New York

 **MILWAUKEE WESTERN FUEL CO**
 MILWAUKEE, WIS.

RUTLEDGE & TAYLOR COAL CO.
 MINERS AND SHIPPERS
TRENTON SOOTLESS FOR DOMESTIC USE
 Lump, Egg or Nut Sizes
 Loaded in Box or Stock Cars for the Western Trade
LIVINGSTON AND STAUNTON
 MINES LOCATED AT
 Trenton, Ill., on the E. & O. S. W. Ry.
 Livingston, Ill., on the C. & E. I.—Big Four
 Staunton, Ill., on the Wabash
 Main Office: Lincoln Trust Bldg. - - - St. Louis, Mo.
 Branch Offices: Old Colony Bldg. - - - - Chicago, Ill.

North Western Fuel Co.

AGENTS AND EXCLUSIVE SHIPPERS

"Scranton" Anthracite, "Fairmont" Coal and Coke, "Ocean" Smokeless.
"Georges Creek" Smithing, "Somerset" and Hocking Valley Coal

Covered Wharves:—Duluth, Superior, Washburn and Milwaukee.

ALL-RAIL FACILITIES—CHICAGO.

Yearly Storage and Shipping Capacity—3,000,000 Tons.

GENERAL OFFICE:
Pioneer Press Building, St. Paul.

MILWAUKEE OFFICE:
Plankinton Building.

CHICAGO OFFICE:
Fisher Building.

O. L. GARRISON,
President

BIG MUDDY COAL & IRON COMPANY,

EDWARD BROWN,
Secretary

Mines in Jackson and Williamson Counties, Illinois. Capacity, 5,000 Tons Daily

HIGH GRADE COAL

THREE WASHERIES, PRODUCING 3,000 TONS WASHED COAL DAILY

The celebrated Big Muddy coal is only produced at Murphysboro, in Jackson County, and the Cartersville District Coal, grading next to Big Muddy, is mined in Williamson County.

PRINCIPAL OFFICE:
WAINWRIGHT BLDG., ST. LOUIS

NEW KENTUCKY COAL CO., Fisher Bldg., CHICAGO
EXCLUSIVE NORTHWESTERN AGENTS

F. O. WYATT, General Manager
550 Old Colony Bldg., Chicago.

H. S. HAZEN, Treasurer
La Salle, Illinois

The La Salle County Carbon Coal Company

EXCLUSIVE MINERS AND SHIPPERS

OF THE

Original "La Salle 3rd Vein" Coal

SHIPMENTS DIRECT VIA

C. B. & Q. RY. ILLINOIS CENTRAL C. M. & ST. P. C. R. I. & P. SYSTEM

MINES AND GENERAL OFFICES: LA SALLE, ILL.



HUNTER W. FINCH & CO.

General Offices, Fisher Building, Chicago

PRIVATE EXCHANGE, ALL DEPARTMENTS

PHONE HARRISON 521

MARYLAND COAL PRODUCTION SHOWS DECREASE IN 1908

The total production of coal in Maryland in 1908, according to E. W. Parker, of the United States Geological Survey, amounted to 4,377,093 short tons, having a spot value of \$5,116,753—a decrease, as compared with the production of 1907, of 1,155,535 short tons, or 20.89 per cent, in quantity, and of \$1,506,944, or 22.75 per cent, in value. The decrease is attributed to the general business depression in 1908. In only one year since 1896 have the coal mines of the state made a smaller output, and that was in 1900, when, as the result of strikes lasting from 90 to 200 days, the production fell off nearly 800,000 tons, amounting to 4,024,688 short tons in 1900, as against 4,807,396 tons in 1899. The average price per ton in 1908 was \$1.17, as against \$1.20 in 1907 and \$1.19 in 1906.

Reports from the mines show an increase in the number of men employed from 5,880 in 1907 to 6,079 in 1908, but the average number of days the mines were worked decreased from 263 in 1907 to 220 in 1908. In 1906 the number of men employed was 6,483 and the working days averaged 250. The average production per man showed a marked decrease in 1908, being but 720 tons in that year as compared with 941 tons in 1907. The average daily production per man in 1908 was 3.27 short tons, as against 3.58 tons in 1907 and 3.38 tons in 1906. A part of the decreased production per man employed is attributed to the decrease in tonnage of coal mined by machines. The machine-mined coal in 1908 amounted to 208,134 short tons, as compared with 479,110 tons in the preceding year; the number of mining machines decreased from 43 in 1907 to 39 in 1908;

and the percentage of machine-mined coal to the total production decreased from 8.66 in the earlier to 4.76 in the latter year.

By far the greater number of Maryland mines work ten hours a day. In 1908 there were 49 mines, employing 5,905 men, which worked ten hours a day; 3 mines, employing 59 men, which worked nine hours; and 1 mine, employing 80 men, which worked eight hours.

The coal-bearing formations of Maryland are contained within an area of 455 square miles, and the original supply has been estimated by M. R. Campbell, of the United States Geological Survey, at 8,044,000,000 tons. From this there has been taken since mining began in 1820 a total of 151,983,641 short tons, which, including the waste of one-half ton for each ton mined, represents an exhaustion of approximately 228 millions of tons, or somewhat less than 3 per cent of the original supply. These figures indicate that the coal fields of Maryland still contain a store of 7,716,000,000 short tons of coal.

The collection of statistics of mineral production in Maryland in 1908 was carried on by the United States Geological Survey under co-operative agreement with Dr. William Bullock Clark, state geologist, and the completeness and promptness with which the work has been done are in large degree due to this co-operation.

The Sta Cahaba Coal Company, Birmingham, is bankrupt and H. W. Coffin has been named as receiver. This is in connection with the appointment of James Stillwell, receiver of the properties of the company in Montgomery, and of the Clear Creek Lumber Company, both of which are said to be principally owned by W. G. Robinson of Birmingham. The mines have not been working for some time.

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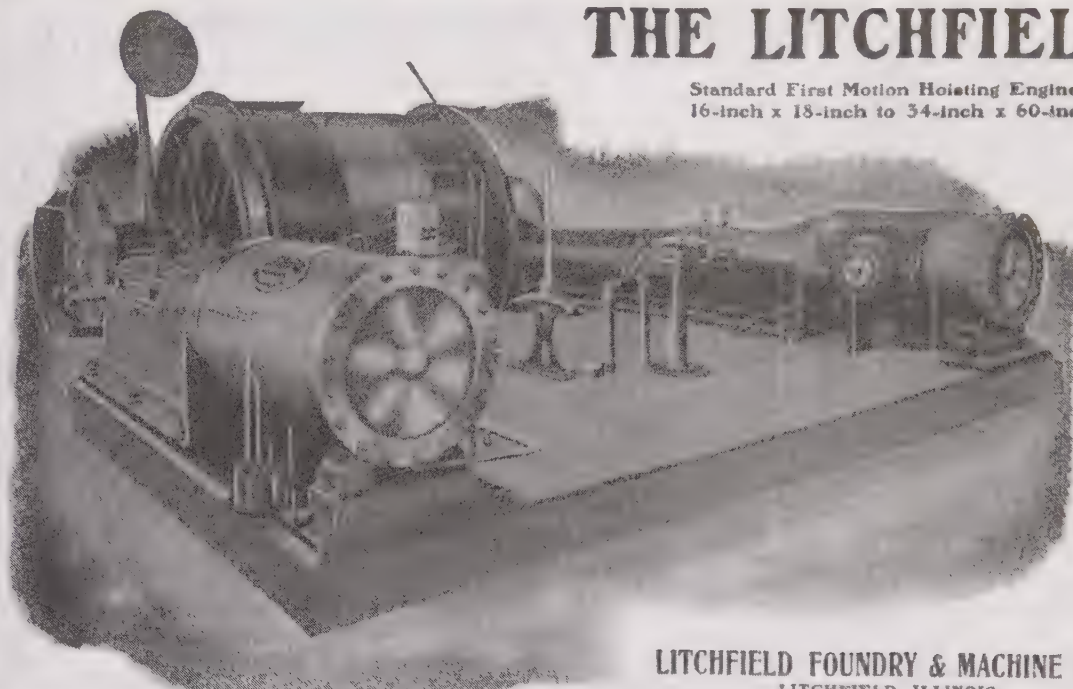
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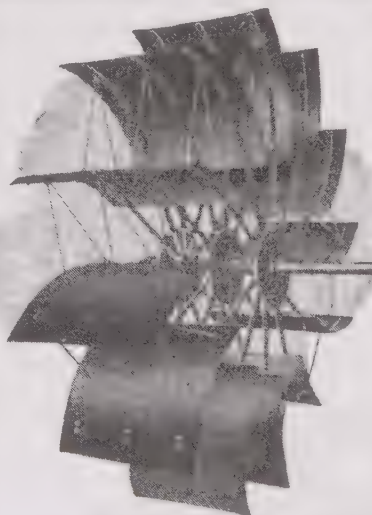
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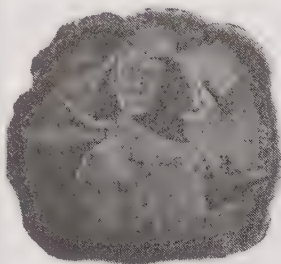
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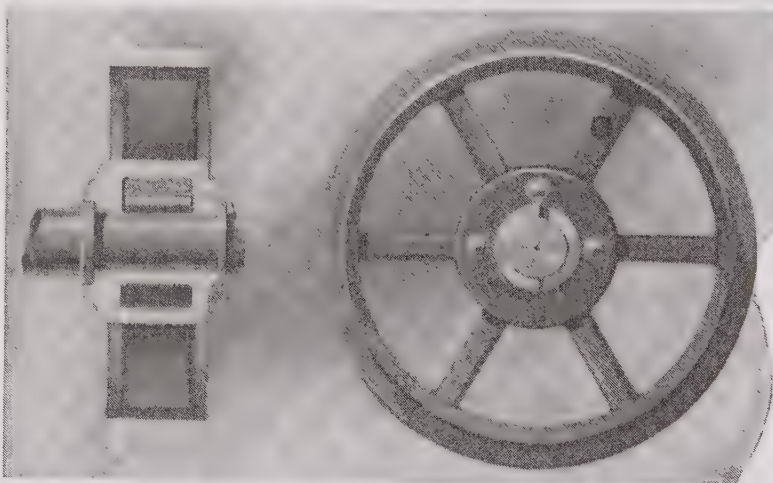
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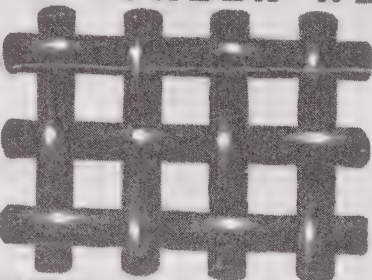


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Commonwealth Fuel Company, Pittsburg, Pa. George Paull, vice-president.

Burk Hollow Coal Company, Whitley County, Ky.; capital increased from \$10,000 to \$20,000.

Greenwich Coal Storage Company, New York City; capital, \$25,000. B. G. Wilbur and others.

Pastor Coal Company, New Straitsville, O.; capital, \$10,000. Incorporators: S. M. Pastor and others.

Northern Bell Mining Co., Seattle, Wash.; capital, \$250,000. Incorporators: A. T. Prichard, C. W. Tyrer.

Hibber-Barnes & Company, Chattanooga, Tenn.; capital, \$25,000. Incorporators: M. W. Eastland, J. R. Barnes.

Acme Coal Co., Pittsburg, Ky.; capital, \$6,000. Incorporators: Alfred Feitcher, J. L. Cardwell and Renu Brown.

People's Coal and Brick Company, Upper Sandusky, O.; capital, \$15,000. Incorporators: E. W. Allen, Fostoria, and others.

Johnson Lumber & Fuel Company, Rockford, Ill.; capital, \$12,000. Incorporators: Carl Johnson, Verel Johnson, George R. Sly.

George W. Smith & Company, Philadelphia, Pa.; location in Illinois, Chicago. Capital, \$200,000; capital in Illinois, \$60,500.

Ward Coal Co., Scranton, Pa.; capital, \$10,000. James Ward, president; J. Rosencrance, vice-president; John Reilly, secretary.

Girard Collieries Company, Springfield, Ill.; capital, \$6,000. Incorporators: E. Puttkammer, Maclay Hoyne, Robert E. Hogan.

Independent Fuel Company, Tulsa, Okla.; capital, \$5,000. Incorporators: R. R. Murphy, G. E. Williamsen, M. W. Kelsey.

Alliance Coal Company, Indianapolis, Ind.; capital, \$100,000. Incorporators: Ovid B. Jameson, Linn D. Hay, Pearson Mendelhall.

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Acme Blue Gem Coal Company, Williamsburg, Ky.; capital, \$10,000. Incorporators: Crockett Perkins, Belle Perkins, Archie Scott.

Seneca Wilmington Coal Company, Seneca, Ill.; capital, \$25,000. Incorporators: J. L. Jones, George W. McLester, James R. Buckley.

Huhn O'Connor Coal Company, Springfield, Ill.; capital, \$5,000. Incorporators: Huhn J. O'Connor, John O'Connor, Harry York.

Ideal Fuel Company, Trinidad, Colo.; capital, \$60,000. Joseph Cox, president; Frank R. Wood, secretary; Robert O'Neil, general manager.

Pittsburg Gas & Fuel Co., Fairmont, W. Va.; capital, \$300,000. Incorporators: B. P. Porter, John F. Montgomery, W. T. Robinson.

Black Warrior Coal & Coke Co., Camden, N. J.; capital, \$1,000,000. Incorporators: F. R. Hansell, George H. B. Martin, John A. McPeak.

Lamar Coal, Oil and Gas Development Co., Lamar, Okla.; capital, \$10,000. Incorporators: B. F. Powell, W. D. Atkins, H. D. Mitchell.

Big Bottom Coal Co., Mossy Bottom, Pike County, Mo.; capital, \$1,000. Incorporators: O. R. Lowe, Jas. M. Saton, I. L. Clark and O. L. May.

West Frankfort Coal Company, West Frankfort, Ill.; capital, \$40,000. Incorporators: Thomas Horn, Dennie M. Parkhill, Jesse Dimond.

National Carbo Fuel Co., Rochester, N. Y.; capital, \$25,000. Incorporators: Frank O. Blake, Angus C. MacColl and Charles G. Fischer.

Boonsboro Coal and Grain Co., Hagerstown, Md.; capital, \$5,000. Incorporators: Stanley P. F. Kline, Herbert A. Kline, B. Clifton Warrenfeltz.

V. & O. Red Ash Coal Co., Charleston, W. Va.; capital, \$10,000. Incorporators: Arthur N. Straughan, Homer P. Elliott, Mrs. Fannie D. Straughan.

Brereton Coal Co., Brereton, Ill.; capital, \$5,000. Incorporators: William J. Spencer, Charles J. Spencer, Charles P. Jacobus, Joseph P. Daily.

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Fort Collins Coal, Seed & Transfer Company, Fort Collins, Colo.; capital, \$10,000. Incorporators: James F. Vandewark, Charles McIntosh, Charletta McIntosh.

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Iowa Gulch Mining Company, Pittsburg, Pa.; capital, \$400,000. Incorporators: H. M. Gross, Thomas J. Hawkins, R. B. Steiner, H. A. Lutz and Thomas Hanson.

Pittsburg and Youghiegheny Coal Company, Pittsburg; capital, \$150,000. Incorporators: James F. Cook, Thomas J. Cook, D. C. Brown, J. B. Brown, Jr., E. C. Hatcher.

Wilbur Coal and Coke Co., Wilmington, Del.; capital, \$175,000. Incorporators: Wilbur F. Leitzel, State College, Pa.; E. L. Squires, G. W. Dorsey, Jr., Wilmington, Del.

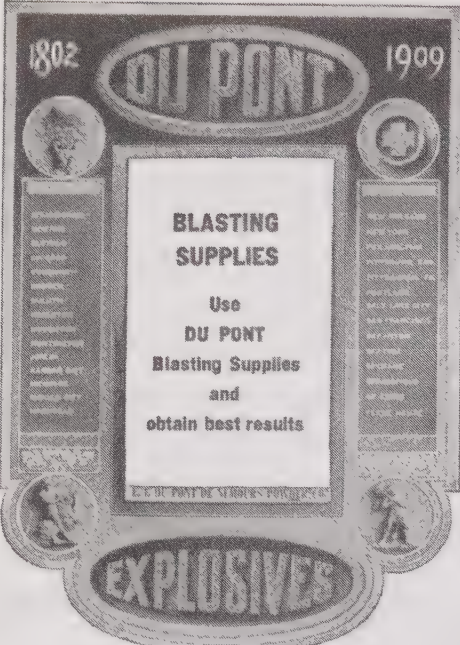
Queen Shoals Coal Company, Charleston, W. Va.; capital, \$30,000. Incorporators: William Price, W. A. McCorkle, J. E. Chilton, J. A. Holley and W. E. Chilton.

American Pocahontas Coal Corporation, Norfolk, Va.; capital, \$25,000. C. M. Kayler, president; Goldsboro Sirell, vice-president; S. H. Tyler, secretary; S. E. Moriss, treasurer.

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West Mountain Coal Company, Nephi, Utah. President, H. D. Goldsborough; vice-president, T. W. Rees, of Wales; secretary and treasurer, T. C. Winn. These, with W. G. Orme and E. E. Goldsborough, make up the directory.



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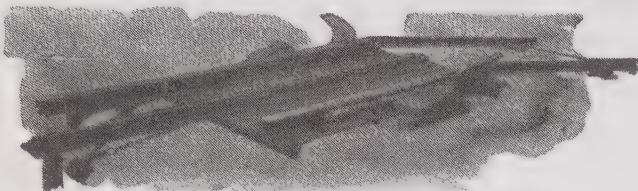
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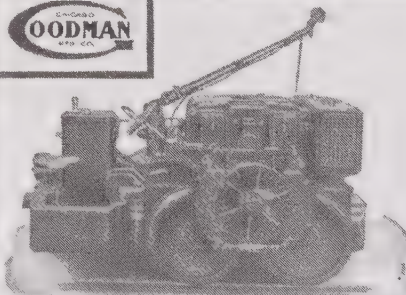
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FUEL

A WEEKLY JOURNAL DEVOTED TO COAL, COKE & KINDRED INDUSTRIES

Vol. XIII. No. 3.

CHICAGO, ILL., MAY 18, 1909.

Price \$3 Per Year.

NEW COAL BRIQUETTING PLANT AT KANSAS CITY

Written for FUEL by C. T. Malcolmson, Briquetting Engineer, Roberts & Schaefer Company, Chicago.

The Standard Briquette Fuel Company of St. Louis, Mo., have just let a contract for a complete coal briquetting plant to be located in Kansas City, Mo. The plant has been designed and will be built by Roberts and Schaefer Company of Chicago. Accompanying illustrations, showing the general arrangement and design of this plant, give evidence that this will be the second successful briquetting plant to be located in the middle West for the purpose of manufacturing and marketing briquettes made from the semi-bituminous coals of western Arkansas and eastern Oklahoma.

The first plant, which was described at some length in FUEL some months ago, was built by the Rock Island Coal Mining Company and located near its mines in Hartsborne, Okla. This plant has proved conclusively that under favorable commercial conditions, briquettes made from these coals find a ready sale for domestic purposes when sold in competition with lump coal from the same mines, or with other coals usually met in the same market. Basing our judgment on the experience gained at the Hartsborne plant, we feel reasonably sure that the plant of the Standard Briquette Fuel Company will mark an advancement in the briquetting industry in this country.

General Arrangement of the Plant.

In the general arrangement, as shown in Fig. 1, the raw material will be brought into the plant from the switch of the Kansas City Belt Line and pass over the track scale, thus keeping an accurate record of all slack coal received. This slack coal will be unloaded mechanically from the cars by means of a car unloader, and under ordinary conditions will be delivered either directly to the storage bin in the briquette machine building, or diverted to a 200-ton coal pocket outside the building. If the coal has been subjected to rain in transit, or for any other reason it is received at the plant too wet to be briquetted, it will be delivered from the unloader to a 60-inch by 30-foot Ruggles Coles dryer, and the dry coal carried either to the storage pocket or the bin in the briquette machine building. Provision is also made to utilize the same equipment in handling the coal from the outside storage to the building. The car unloader, and all of the equipment for drying and handling the coal will have a maximum capacity of twenty-five tons per hour.

The coal pocket in and at the rear of the briquetting building, will be installed at a sufficient height above the main floor to allow for the easy handling of the fuel by gravity through the mixing and feeding apparatus below. Under this bin a charging floor will be located for the use of the operator directing the feeding and mixing of the coal and binder. All of the coal from the overhead bin will pass through a Richardson automatic scale, which will reg-

ister at all times the amount of coal being used. The coal will be discharged from the automatic scale into a small feeding hopper with automatic feed, delivering coal to the mixer below in a uniform stream and in the proper amount for the requirements of the press.

In the rear of the briquette machine building, as shown in Fig. 1, there will be a concrete platform on the same level as the floor line of the building for the storing and handling of the binder. In the center of this platform will be the mill for grinding pitch which is used as a binder. The ground pitch will be delivered mechanically to the charging platform in the building by means of a conveyor of sufficient size and at the proper speed to maintain a constant supply of pitch in the building. All of the binder used will be weighed before being fed by hand by the operator into the pitch cracker, or pulverizer. In this way an accurate check on the amount of binder being used in the briquettes will be maintained at all times. The broken pitch will be received on the charging platform in the briquette machine building and delivered to a feeding hopper, similar to that described for the coal. At these two hoppers the operator will determine the correct proportion of pitch and coal which is being fed continuously to a mixer below. The mixed coal and binder are then delivered to a Williams' pulverizer which grinds them to the proper fineness to make good briquettes. The pulverized mixture is elevated to a point sufficiently high above the floor so that it can be delivered by gravity through an additional feeding, mixing and conveying apparatus to the heater of the briquetting press.

All of the automatic feeders and conveying equipment used in feeding, mixing and handling both the coal and binder are under the immediate control of one operator known as the "pitch feeder." By this means any variations in the coal or binder, such as the percentage of moisture or fineness of the raw material or variations in the quality of the pitch can be noted by the pitch feeder and proper adjustments made by him so that the resulting briquettes will be uniform and perfect.

In the heater of the press the proper amount of heat and moisture are maintained by steam delivered through apertures in the walls of this heater. Superheated and saturated steam and water are used in varying quantities to obtain a conglomerate of the proper consistency. Practice has demonstrated that the temperature and percentage of moisture will vary with different coals, and it is only through actual experience by the operator, that this conglomerate is maintained in the proper condition to make satisfactory briquettes. After passing through the mixing and heating cylinder, the material is delivered to the dies in which the briquettes are made. A Misner press will be installed having a capacity of ten tons per hour. These briquettes

are cylindrical in form with convex ends, and will average thirteen ounces each in weight.

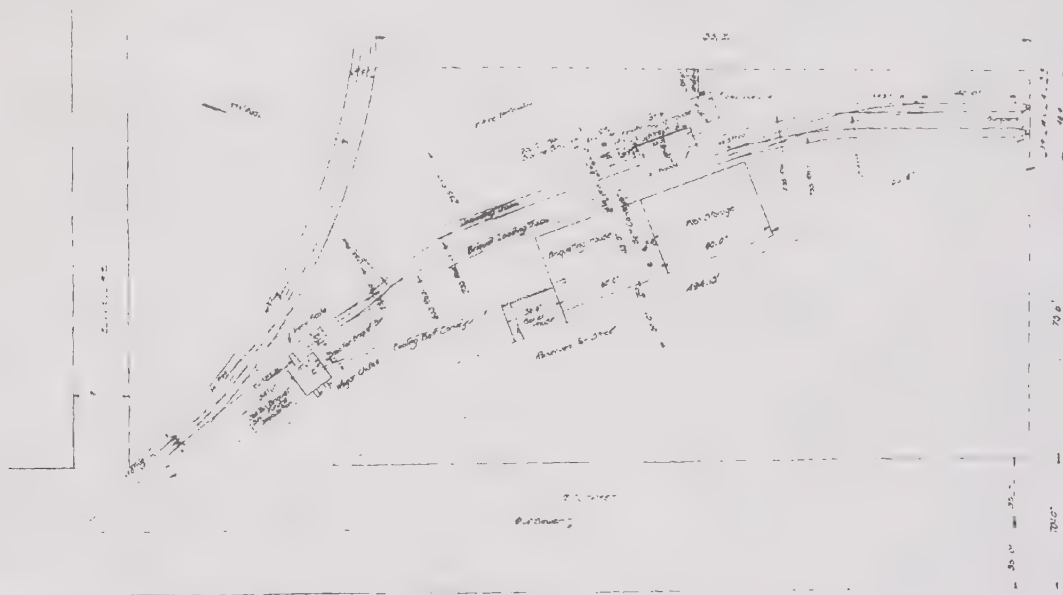
The discharged briquettes are delivered to a conveying belt which serves not only to carry them from the press and deliver them to the storage bin for briquettes, as shown in the accompanying illustrations, but also provide a means for cooling the briquettes in transit. Under the maximum capacity of the press, this belt is so timed that the briquettes will remain in transit for a length of time sufficient to allow the outer surface of the briquette to harden and be handled by mechanical means without breakage. Additional provision, however, is made to insure further freedom from breakage in handling by means of a specially designed "telegraph" installed in the briquette storage pocket. This storage pocket will have a capacity at first of one hundred tons, but will be so designed that it can be enlarged if desirable to three times that capacity.

A loading chute, similar to that used by the Roberts and Schaefer Company in their coaling stations, will be in-

The buildings will consist of wooden framing covered with corrugated sheet steel siding and composition roofing. The entire main building and boiler room will be floored with concrete.

By far the greatest item of expense in the manufacture of briquettes outside of the raw material is the binder. The history of the briquette industry in Europe reveals the fact that every conceivable substance having any claim as a bond, has been used for this purpose in the making of briquettes and after practical experience in sifting various claims for these proposed binders, the consensus of opinion has given preference to pitch made from oil or coal tar. This tar is a by-product obtained in the manufacture of coke in by-product ovens, and in the manufacture of gas either from the destructive distillation of coal or by carburetting water gas with oil.

In this country the main consumption of tar which is not burned for fuel purposes is in the making of creosoting oils, roofing pitch and the manufacture of pavements. In



General Plan of Coal Briquetting Plant for Standard Briquette Fuel Co., Kansas City, Mo. Designed and Built by Roberts & Schaefer Co., Chicago.

stalled to deliver the briquettes from the storage pocket to railroad cars. This chute will be of sufficient capacity to allow for the rapid loading of the briquettes which also prevents breakage.

A car puller will be provided to move the cars as they are being loaded which will also decrease the loading time. The position of the car at the completion of loading will be directly on the scales, so that the cars can be loaded exactly to capacity. In this condition it will be interesting to know that briquettes of the shape to be manufactured at this plant occupy about the same space per ton as egg coal, or from 10 to 15 per cent more space than mine-run.

The increased density of the briquetted fuel and its greater efficiency as a heat producer over the same coal in the form of mine-run, will more than compensate for its increased volume.

No expense will be spared in making this plant mechanically efficient both in economy of design and the quality and capacity of the equipment to be used.

Europe, and especially in Germany, an enormous trade has been developed in the manufacture of coal tar products. The principal revenue derived from the tar and one which has done more than anything else to put the higher derivatives of tar, such as alizarine and the aniline dyes, on a commercial basis, is the furnishing of binder for the briquetting of coal. When we realize that only about 3 per cent of the tar goes to make up these higher derivatives and that we must provide a market for the other 97 per cent, we can readily understand why this country is not in a position to compete with the Germans in the manufacture of coal tar products. Of the 97 per cent available for other purposes, practically one-half can be considered as creosoting oil for which there is a constantly growing demand, but for the other 50 per cent we have at the present time practically no market except for roofing pitch. We must look to the briquetting industry to provide this market.

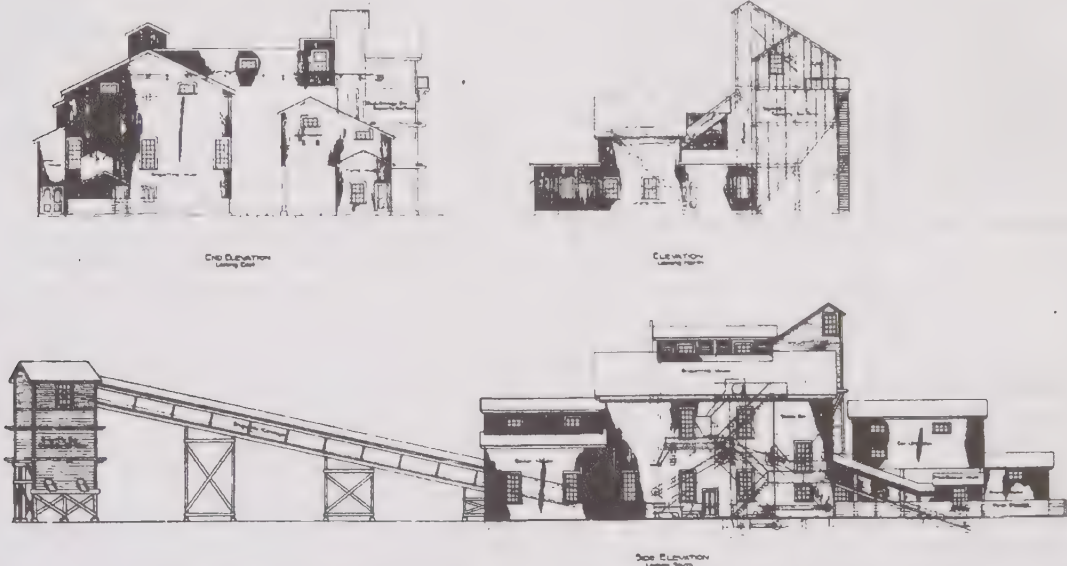
There is no doubt that the successful briquetting of coal depends as much on the specifications and uniformity of the

binder furnished as it does on the mechanical operations of the machinery making up the plant. The consumption of pitch for briquetting purposes so far, in this country, has been so irregular and uncertain, that pitch manufacturers have not been disposed to give the manufacture of pitch the proper consideration. As has already been observed by one of the leading pitch manufacturers of the country, any variation in quality or melting point has never seriously disturbed the present consumers of coal tar pitch. In working out at Hartshorne the problems which are always inherent in new propositions, it was discovered that the ability to put on the market a uniform product necessitated a uniform quality of binder. One of the most promising indications of future success in establishing this important industry in the United States is the attitude which has recently been assumed by the leading pitch manufacturers in recognizing the necessity of a distinct product to be known as "briquetting pitch." These manufacturers also recognize the necessity of assisting in every way to establish

ductive of practical results. Briquetting is one solution of the coal waste. The agitation throughout the country for the reduction in smoke, particularly in large cities, is another factor which is bound to assist this new industry. We cannot hope to take the high volatile coals mined in Illinois and make of them by any treatment a fuel which will be smokeless in burning under all conditions; but there are high grade, low volatile coals sold in the Chicago market and which, if briquetted, with proper attention to the percentage and quality of the binder, will make an absolutely smokeless fuel for domestic purposes.

This is a problem which the plant of the Standard Briquette Fuel Company at Kansas City is attempting to solve when it places upon the market a briquette made from the slack of "Arkansas anthracite" coal. Kansas City has already had sufficient experience in the use of briquetted coal to pay good margin for briquettes of this character.

Another noticeable fact may be mentioned in this connection in speaking of high grade, low volatile coals: As a



Elevations of Coal Briquetting Plant for Standard Briquetting Fuel Company, Kansas City, Mo. Designed and Built by Roberts & Schaefer Co., Chicago.

this new industry by not only spending considerable money in developing a pitch of the required specifications, but also placing that pitch on the market at a price which will make the briquetting of coal commercially possible.

For some time to come lump coal will be too plentiful and bring too low a price in the principal producing fields, to make possible any considerable differential between its price and the slack or fine coal from the same mines. It can be readily understood that there must be sufficient margin to allow for briquetting charge to make the briquetting of this fine coal a business proposition. At the same time, there are several fields in the United States where this margin warrants the establishing of briquetting plants, and in these fields we believe the operators are now justified in giving serious consideration to this means of utilizing their fine coal and preparing for market a product which is in every way superior to their lump coal.

We believe that the country has now reached a point in its development when the conservation of its natural resources must pass from the period of agitation to one pro-

rule, these coals are friable and the lump coal will soon become largely slack if exposed to the action of the weather. The United States government has demonstrated that briquettes made from these coals would withstand the action of the weather for almost an indefinite period, and this fact has been borne out by experience with other coals at other briquetting plants throughout the country. We believe that this quality can be reckoned with by the operators in Illinois as one of the solutions in taking care of this fine coal. Briquettes do not deteriorate either in physical quality or in heat value in being stored for several years in the open.

A briquetting plant established at the mines will allow an operator to produce coal to the minimum of his lump coal requirement, and briquette such of the fine coal as does not find a ready sale. These briquettes can be stored and shipped when coal cars are idle to some common distributing point, there to be held in storage until the price warrants their sale. We know of no better preventive of strikes than the ability of the operator to carry a large quantity of coal in storage which does not deteriorate in value.



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No. 3.

Sympathy.

Thomas N. Tallourd

The blessings which the poor and weak can scatter
Have their own season. 'Tis a little thing
To give a cup of water, yet its draft
Of cool refreshment, drained by fevered lips,
May give a shock of pleasure to the frame
More exquisite than when nectarean juice
Renews the life of joy in happiest hours.
It is a little thing to speak a phrase
Of common comfort which by daily use
Has almost lost its sense, yet on the ear
Of him who thought to die unmourned 'twill fall
Like choicest music, fill the glazing eye
With gentle tears, relax the knotted hand
To know the bonds of fellowship again
And shed on the departing soul a sense
More precious than the benison of friends
About the honored deathbed of the rich—
To him who else were lonely that another
Of the great family is near and feels.

If they would quit discovering and developing so many new coal "finds" fewer of those already on hand would be going into bankruptcy.

If you can't lose your money fast enough running a coal mine, try a peat-making plant.

LATEST SPRINGFIELD ADVICES.

The last days of the present session of the General Assembly of Illinois are approaching, and during the past week some progress was made with the legislation affecting the coal industry. The bill providing for the coal mine investigation commission is now in the hands of the appropriations committees of both houses, which will report them out this week. It is the hope of the friends of the measure that the full amount asked will be granted, in order that the work done may be completed by the next General Assembly and action thus pushed on towards establishing an up-to-date code of mining laws that will be easy of comprehension and calculated to preserve human life and at the same time guard the coal resources from all waste as far as possible.

The employers' liability bill pending in the lower house has passed that body. A bill different in its terms and requirements is pending in the Senate and will probably pass that body this week. Each house prefers its own bill, so that the question of which is to become the law, if either, is as yet undecided.

The bill providing for the establishment of a school of mines at the University of Illinois is also in the hands of the appropriations committee and will be reported out this week. There is a very general friendliness to the bill.

WHO IS MAKING PEAT BRIQUETTES?

FUEL endeavors to keep abreast of the fuel industry in all its branches, but has been unable to find in this country in actual operation a plant for preparing peat for the market. Notices frequently arrive of the formation of new companies for utilizing the peat, and shortly after the industrious special correspondent announces that in a few days or in a few weeks the peat will be rolling out and the users thereof saving a great part of their fuel bills. But the next news that comes in from that point is that the peat has been found unsuited to the machine, or that the stockholders have been left with the machinery on their hands—machinery that is fit for nothing else under the sun than to make impracticable briquettes. Next time the people who get up the companies—and also sell the machinery—are heard from a long distance from the other venture, and so far as FUEL is informed the same process is repeated with slight variations.

Hardly a state in the Union but has had a plant erected, and we want to repeat that if a single one is in operation or has ever been in operation beyond the making of a few experimental briquettes, FUEL has never been informed of that fact and has failed in every effort to locate the factories. If anybody that has any knowledge of a peat plant in operation will put them in communication with FUEL we will esteem it a special favor and will give it the best and fullest send-off that we can make from a statement of the facts. We will be glad to have pictures of the plant and the machinery and will pay well for them if the fact of successful operation can be established. There is a dearth of reliable information on the subject that is simply appalling. The only information at all accessible seems to be that held

strictly for the use of those contemplating an investment in peat-making machinery.

The present scene of activity is in Florida, where the peat promoters are interesting capital in the proposed erection of a plant. If the people of that locality have any money they don't need they might as well buy machinery they can't use as spend it any other way, but there are localities not so well supplied. FUEL knows something about the disasters that seem infallibly to overtake peat enterprises, and in the light of that knowledge would, if desiring to invest in a peat plant, proceed in this wise: We would demand the names of every plant now in operation, and of every plant erected by the company promoting the deal. Then we would write to the mayor of the town or city, to the postmaster, to the board of trade or other business body, and get the facts first-hand. In order to offset the probable statement that the plants that failed had been built by other firms, we would get the names of those firms and the name of the city where located, and also their standing in the commercial agencies.

If we are badly informed, we are open to conviction. We will most gladly print the entire truth about any plant that has ever made any peat ready for the market and sold it. The United States Geological Survey officially says that the utilization of peat is very remote; it will follow the exhaustion of the coal, provided nothing better be discovered in the meantime. Briquettes made of anything else than coal have uniformly proved unsatisfactory in this country, and in other countries have been used only in the absence of coal or other fuel.

It has been discovered since the Tennessee legislature adjourned that they passed no law forbidding the growing of mint in that state.

COAL PICNIC WILL BE JULY 17.

In the absence of President Rutter, Vice-President Milton E. Robinson presided at the meeting of the Chicago Coal Dealers' Association last week. A number of matters were discussed, including the picnic, which it was decided to hold earlier this year than last, and Chairman Frank Browning reported that the committee had decided on July 17th as the date, and Riverview Park, at Aurora, Ill., as the place. Full details will be announced later.

There was some discussion of the stand that the team owners should take on the demand of the coal teamsters for an advance; also on the proposition for a demurrage bureau within the association, which was discussed and advocated by a number of speakers. The chairman of the committee engaged in compiling reports of a cost system applicable to all retail dealers urged that a larger number of the members compile the figures asked for so that the committee could proceed with their work. It was reported that the collection department had collected since the last report \$453.81, making a total of \$21,823.82 for the first twelve months of its operation. It has been hoped that the aggregate of \$20,000 might be reached, so that the results exceeded all expectations.

Nothing lovelier can be found
In woman, than to study household good,
And good works in her husband to promote.

—Milton.



W. W. KEEFER.

Friends in Chicago have heard with pleasure the news of the promotion of W. W. Keefer to be vice-president and general manager of the Gould coal mine interests on the Pittsburg outer belt, known as the West Side Belt Lines. It will be remembered that the Pittsburg Coal Company gave up the lease they had of these coal lands, which are vast in extent and contain the best seam of Pittsburg coal. The Gould interests thereupon decided to work the mines and, immediately after the decision on the commodities clause of the Hepburn bill, completed organization of a company for that purpose. This plan was almost completed when the decision was rendered, which led some into the error of believing that the decision to work the mines was due to the decision.

Mr. Keefer is a man who has served the coal interests intelligently and well. He has most recently been with the Monongahela River Consolidated Coal and Coke Company, from which he goes to this new company. He is known not only as a competent coal operator, but has been prominent from the beginning in the joint trade agreement existing in the bituminous coal fields. He has many times served with H. N. Taylor of this city on the special scale committees representing Illinois in the interstate conventions, and still has unnumbered friends in all the western coal industry in addition to the host he has made since going to his places of importance in the Pennsylvania field.

MINE INSPECTOR SUICIDES.

With his bed blocking the door and gas escaping from an unlighted jet, W. J. Neilsen, aged 42, and unmarried, mine inspector of the nineteenth bituminous district, was found dead at his home at Irwin, Pa., by a sister who has been keeping house for him. No motive has been found for the suicide. Neilsen, who was an expert in his line, had been preparing to take an inspector's examination in Pittsburg. He went to Irwin three years ago from Wilson, Pa., where he had advanced from a miner to the position of mine inspector. He was a Mason and a Knight of Pythias.

COMMERCE COMMISSION WANTS MORE COAL ROAD LEGISLATION

The Interstate Commerce Commission has presented a report to President Taft in support of their view of the recent decision of the Supreme Court on the commodities clause, and as their reason for asking the following additional legislation:

Requiring every common carrier engaged in the interstate transportation of coal to make public the system of car distribution.

Requiring, where the capacity of the mines is the basis for the distribution of equipment, a fair, just and equitable rating for all mines.

Prohibiting the use of "individual" or "private cars" in the handling of the coal traffic.

The commission also would like to have the railroads forbidden, after a reasonable time, to own or have any interest, directly or indirectly, in any operated coal properties and to extend this prohibition to the officers or employees of the roads. This was the original purpose of the men agitating for the "commodities clause" in the Hepburn interstate commerce act.

It is said that the President was highly gratified by the declaration contained in the decision that Congress had the constitutional power to deal with the subject. He talked the matter over with the members of his cabinet and told them he feels there should be additional legislation which will round out the law. He believes the railroads should charge the same rate upon the shipments of an independent company as upon those which it controls and he wants, as does the commission, the law extended so as to insure the same treatment for all operators. During the summer and fall the President will study the situation with the greatest care and will present his conclusions in his annual message with clearness and force.

"It seems that certain of the railroad companies," the commission reports, "have expended large amounts in purchasing interests in coal companies and in furnishing advancements to them. The decision of the Supreme Court seems to support the conclusion that the powers of these companies to do these acts are extremely doubtful. If it is claimed that the railway companies and their stockholders were benefited by the purchase of interests in the coal properties and by the guaranteeing of the bonds of the coal companies, through the assurance that the coal mined by these companies would be shipped over its lines, the answer should be sufficient that the coal could not be shipped except over the railroads serving these mines at the time of the transaction; but the courts have not recognized that this right is to be conceded because the results may be beneficial to the corporation."

It is the intention to refer the report of the commission to the department of justice with a view to ascertaining if, under the decision of the Supreme Court, action cannot be taken whereby the monopolistic policy of some of the roads can be restricted.

THE COAL MINE AT LEAVENWORTH.

The departure of the Oklahoma convicts from the Kansas state prison has made considerable change in the workings at the Lansing institution. Although there were Oklahoma men in every department at the penitentiary, the greatest loss of labor is in the mine, which is the largest industrial department of the prison. There were 467 convict miners before Oklahoma took her criminals home. At present there are 193 men working in the mines. During the year 1908 from 50 to 70 thousand bushels of coal were hoisted

per week, while the records for the week just ended show a hoisting of 25,987 bushels. The coal is used by the state institutions. The prison mine is unlike most every other mine in the country in that it has brick walls and painted timbers to support the tunnels. Also one hundred tungsten and incandescent lights make the pit as light as day. Here and there through the mines are officers with desks, chairs, carpets, etc., and one would really believe he was in a business office after night.

NORTH DAKOTA'S COAL RATE LAW.

The law fixing maximum rates for carrying lignite coal within the state of North Dakota, recently declared constitutional by the Supreme Court of the state, provides the following rates:

Distance.	Rates Per ton.
From 10 to 15 miles.....	.35
From 15 to 20 miles.....	.37
From 20 to 25 miles.....	.38
From 25 to 30 miles.....	.40
From 30 to 35 miles.....	.41
From 35 to 40 miles.....	.43
From 40 to 45 miles.....	.44
From 45 to 50 miles.....	.46
From 50 to 55 miles.....	.47
From 55 to 60 miles.....	.49
From 60 to 65 miles.....	.50
From 65 to 70 miles.....	.52
From 70 to 75 miles.....	.53
From 75 to 80 miles.....	.55
From 80 to 85 miles.....	.56
From 85 to 90 miles.....	.58
From 90 to 95 miles.....	.59
From 95 to 100 miles.....	.61
From 100 to 105 miles.....	.62
From 105 to 110 miles.....	.64
From 110 to 120 miles.....	.69
From 120 to 130 miles.....	.76
From 130 to 140 miles.....	.87
From 140 to 150 miles.....	.97
From 150 to 160 miles.....	1.01
From 160 to 170 miles.....	1.09
From 170 to 180 miles.....	1.20
From 180 to 190 miles.....	1.34
From 190 to 200 miles.....	1.47
From 200 to 210 miles.....	1.59
From 210 to 220 miles.....	1.69

Where the shipment is over two or more lines of railroad an additional charge of \$2.50 per car for each transfer is allowed to cover cost of switching.

WESTERN KENTUCKY COAL OPERATORS.

The Western Kentucky Coal Operators' Association held its annual meeting in Louisville, every mine in that section of the state west of Louisville being represented. I. P. Barnard, of Louisville, president of the Williams Coal Company, and the Taylor Coal Company, was re-elected president of the association; F. P. Wright, of Bevier, was elected vice-president, and D. Stewart Miller, of Owensboro, secretary and treasurer and commissioner. M. M. Bardwell, of Williams' mines; W. G. Duncan, of Greenville; W. D. McElhenny, of Central City, and John Montford, of Uniontown, were elected members of the Executive Committee. The association adjourned in time to permit the members to go to the races at Churchill Downs.

Twenty feet of pure coal is said to have been found in Augusta County, Va., three feet below the surface.

FUEL COMPANY DEAL INVOLVES \$400,000

Through a deal involving about \$400,000, the Milwaukee-Western Fuel Company has bought out entirely the docks, property and business of the Northwestern Fuel Company's Milwaukee branch. The big merger has been pending for a year, but agreement was finally reached, details arranged, and the Milwaukee-Western has taken full possession. It is in no sense a consolidation. As far as Milwaukee business is concerned the Northwestern Fuel Company has ceased to exist.

The Northwestern Company was one of the oldest coal firms in Milwaukee, it having had offices there for thirty-two years. In sales it did a yearly business in the city of about \$2,000,000. The deal brings a great amount of valuable property into the hands of the Milwaukee-Western Fuel Company. Its bought out rival had on hand about 75,000 tons of coal. It possessed two large coal docks. One, at the foot of Washington street, with two slips on the Kinnickinnic river, is 1,000x500 feet in size. This dock is on the Chicago and North-Western road. The other is at the foot of Seventeenth street and has 1,000 feet frontage on the Menomonee river. It is on the Chicago, Milwaukee and St. Paul road. The capacity of the two docks combined is estimated at 150,000 tons of anthracite and 200,000 tons of bituminous coal. Their loading capacity aggregates 150 cars a day.

Under the terms of the deal the purchaser will assume responsibility for all unfilled contracts of the Northwestern Company. The Milwaukee-Western expects to be able to give positions to nearly all Milwaukee employees of the Northwestern. The deal makes the Milwaukee-Western Fuel Company sole agents in that city for the Delaware, Lackawanna and Western road's Scranton anthracite and

standard hard coal, for which the Northwestern Fuel Company was also agent. Officers of the Milwaukee-Western say that the change will increase their company's business by from 300,000 to 400,000 tons yearly.

Headquarters of the Northwestern Fuel Company are in St. Paul, with big docks in Duluth and Superior. Its chief business lies in that section of the country. This will remain unimpaired, for the present deal affects only the Milwaukee branch. Officers of the Milwaukee-Western Fuel Company are: President, Edward A. Uhrig; vice president, Alexander Uhrig; secretary and treasurer, Charles W. Moody.

Greatest of Soft Coal Combinations

The Consolidation Coal Company, which before the adoption of the Hepburn coal act was owned by the Baltimore and Ohio Railroad, has acquired the entire capital stock of five coal companies and formed the greatest coal combination in the world, with approximately 200,000 acres in Maryland, Pennsylvania, West Virginia, Kentucky and Ohio, and a capital stock of \$37,650,000. The five companies acquired are the Fairmount Coal Company, capitalized at \$12,000,000; Somerset Coal Company, \$4,000,000; Pittsburg and Fairmount Fuel Company, \$2,250,000; Clarksburg Fuel Company, \$1,250,000, and Southern Coal and Transportation Company, \$500,000.

The Consolidation, which has controlled the companies which it now absorbs, has bought the minority stock in all of them. There will be no change in management. President Clarence W. Watson and Vice President Jere H. Wheelwright continuing as directing heads.

TO MUCH POWDER— TWO MEN WERE INJURED

Deputy State Mine Inspector Sam of Chandler, who made an inspection of Sunnyside mine, in southern Indiana, where an explosion occurred in which two men were burned, reported as follows:

"The explosion occurred on what is known as the second north room 5; I found the room driven in sixty feet from the mouth of the switch and that the break through had been started at 45 feet from the switch, and unknown to the mine boss the miners, Duncan and Grant, on account of bad roof, had started a new break-through seven feet further towards the face, and in making this new break-through Grant started with a chance 6 feet 2 inches, 32 inches on the heel and 52 inches at the point, and after drilling in 40 inches he struck sulphur and stopped drilling when he should have drilled in 62 inches. I found that the shot had blown tamping and that the powder spent its force on the open air, causing the blaze that burned Grant and McNutt. The accident, as reported by me, was that there was not enough tamping to hold the powder in so as to make the shot spend its force on the coal instead of the open air.

"My examination develops that the miner in preparing the shot probably put as much powder into the 40-inch hole as he had prepared for the 60-inch hole, and that, taken together with the fact that he did not put in enough tamping behind the powder, caused the powder when ignited to blow

out into the air in an opposite direction from which it should blow and expend its force, that is, against the coal. When this powder and insufficient tamping blew out into the air of course it met the oxygen in the air and this caused the explosion.

"In the same room I found that another miner had drilled for an unlawful shot."

FLOODED BY AN UNDERGROUND STREAM.

An underground stream of water has been struck by miners in the Robert Gage Coal Company's No. 5 shaft at Bay City, Mich., and 200 miners have been forced out of their rooms. Twelve entries were filled, with the water still gaining slowly, although the mine's pumps, discharging six four-inch streams, have been working at capacity all day. Additional pumps are being installed, but it will probably be nearly a week before the men can all get back to work. The stream broke through the face of the coal in one of the new workings of the mine.

NEW SYSTEM OF ELECTRIC TRACTION.

Consul Francis B. Keene, of Geneva, reports that a new system of electric traction, invented by a Vienna firm of engineers, is soon to be the subject of extensive experiment at Sion, in the Swiss Canton of Valais, known as the Rhone Valley. It is described as having only an overhead contact cable, without ground rails, and the claim is made that it saves unnecessary expense, and that it will probably be adopted for tramways with steep gradients and for mountain railways.

FUEL CONFERENCE AT AMES, IOWA

Ames, Iowa, was the scene of an important assemblage on Thursday, May 13th, when a conference on fuels and demonstration of the use of mine rescue apparatus was held under the auspices of the Iowa State College in Engineering Hall at that place. There are between 1,900 and 2,000 students at this institution, the engineering department of which has attained high rank. The sessions of the conference were held in the engineering hall and in the central building. Mine experts and coal operators posted in the technical part of coal mining were present from a number of states and took part in the program. Students from the engineering department met the visitors at the station and escorted them to the university.

Joseph Sharp, commissioner of the Iowa Coal Operators' Association, presided at the afternoon session, when an address of welcome was delivered by President A. B. Storms of the university, and also by Dean A. Marston. The first paper on the program was that by George S. Rice, of the Technologic Branch of the United States Geological Survey. His topic was "Mine Rescue Work and the Establishment of Mine Rescue Stations in Foreign Countries."

R. Y. Williams, engineer in charge of the mine rescue station at Urbana, Ill., made an explanation of the use of mine rescue apparatus and later gave a demonstration of its use in the college green houses. These are side by side and the demonstrations in one house could be witnessed by those in the houses on both sides of the one used for the experiments.

The buildings, and especially the engineering building, were then seen by the delegates to the conference, and a delightful dinner followed. The evening session convened at 8 o'clock, John P. White presiding.

Mr. Rice delivered a continuation of his address of the afternoon on the things he saw during his foreign tour and the results of his studies of mine rescue work abroad. This was followed by a symposium on the subject of gas and dust explosions in coal mines, and then by addresses on laboratory study of explosions by John Verner, State Mine Inspector of Iowa, and Carl Scholz of Chicago.

The conference was a great success and the interest taken by the students augurs good results from the work in progress at this live institution of learning.

EITHER SHOT FIRERS OR SAFETY POWDER

Chief Mine Inspector John Laing of West Virginia, according to the *Charleston Gazette*, has largely solved the question of preventing mine explosions in West Virginia coal mines during the past weeks. This, says the *Gazette*, is the belief of those familiar with the mining conditions of the state, and who have knowledge of what the mine chief has been doing. From now on, and especially after the first of June, either the shot-firer will be introduced in mine operations or the use of the so-called safety powders will be the rule. And the work of Laing will go even further and will result in the examination of mine foremen before they are employed at the various mines.

Chief Laing returned to his headquarters at Charleston recently after completing his plans along these lines. He has just come from the Norfolk & Western region, where he minutely inspected the Lick Branch mine of the Pocahontas Collieries Company, where two terrible explosions occurred within two weeks of each other last winter, one on December 29 and the other on January 12. Laing pronounced the mine again ready for operation and gave the company a commission to open the mine for work.

But the most important work done there by the chief was his success in convincing the operators in the Pocahontas field of the value of shot firers. The Lick Branch explosions were caused by the excessive use of black powder, followed by blown-out shots. Now the operators have been educated to see the importance of either using safety powder or employ shot-firers, and they have adopted the latter course. From four to a dozen shot-firers will be employed at each mine and the blown-out shot will be a thing of the past. Those in charge of this work will be men of experience and will inspect the hole drilled before the shot is placed, and will also see that the tamping is properly done before the shot is fired.

In the New River field and the Kanawha field the safety powders will be used principally, though in some instances shot-firers will be employed. In the Fairmont region the

shot-firers are already at work and are proving most satisfactory.

To further make his department efficient Chief Laing will, in the near future, hold an examination for those desiring appointments as deputy mine inspectors. Hereafter all vacancies in the corps will be filled under a kind of civil service and the man who is appointed must know what his work is and how to perform it. Such an examination would have been held prior to this time had not the chief been busy with other matters.

But the work of Chief Laing will not even end there. It is at the request of the operators themselves that the mine foremen are to be examined. This examination will likely be conducted by the district deputies, under the direction of the chief, and the companies generally have agreed to employ only such foremen as are pronounced competent after such examination. It will perhaps be a few months yet before this can become effective.

GREENVIEW COAL MINE.

Receiver Homer J. Tice sold at public auction at Greenville, Ill., the personal property, leasehold and coal rights belonging to the Greenview Coal Company. There was a dearth of bidders and the property was sold to Postmaster George C. Roberts, who will pay \$4,100 for the property after the court has approved of the sale. A new company has been organized and the working of the mine, which is practically undeveloped, will be renewed in a short time.

WHAT OUR COUNTRY PRODUCES.

The United States contains less than 6 per cent of the world's population and area; but with this small proportion of workers and area we produce 79 per cent of the corn, 21 per cent of the wheat, 71 per cent of copper, 37 per cent of pigiron, 62 per cent of petroleum and 57 per cent of coal.

CO-OPERATION OF PRACTICAL AND SCIENTIFIC MEN

The following address was delivered March 11, 1909, by G. W. Traer, representing the Illinois Coal Operators, before the Illinois Fuel Conference at the University of Illinois, Urbana, Illinois:

It is a sincere pleasure to me to acknowledge, on behalf of the mine owners of Illinois, the obligations of humanity to the men whose efforts have made it possible that this great, civilized, Christian work shall be carried on here, and whose time and thoughts are being given to it.

Illinois is to be congratulated upon the proprietorship of a university so situated that it is chosen by the federal government to participate in a work of this kind, and with a university organization qualified and eager to do so in the interests of humanity.

Special danger of injury and death never can be entirely eliminated from coal mining and many other industrial occupations. But such danger is multiplied by ignorance, indifference and lack of foresight; or it may be vastly lessened by research and application, and unreserved co-operation on the part of those whose duty it is to think and apply, with those who think and experiment. Our modern civilization is equally distinguished by a wholesome regard for lives and happiness of all human beings and by its profound scientific achievements directed towards the same end. We are here today to witness the dedication of a work of scientific research to that end. And although we may well realize how much remains to be done, we are justified in a feeling of confidence when we reflect upon the achievements of science in the past.

The Achievements of Science.

Seventy-two years ago Macaulay wrote his great essay on Lord Bacon, who was the prophet and the apostle of the practical sciences, as we now know them. Bacon had been dead more than two hundred years when Macaulay wrote this brilliant eulogy on the practical results of what had once been called the new thought, and which, in advance of actual achievement, many people had considered to be merely theoretical, just as many people consider all new thoughts today. The record of the achievements of two hundred years was easily recognized by Macaulay to be without parallel in the past, when he wrote these words:

"Ask a follower of Bacon what the new philosophy, as it was called in the time of Charles the Second, has effected for mankind, and his answer is ready: It has lengthened life. It has mitigated pain. It has extinguished disease. It has increased the fertility of the soil. It has furnished new arms to the soldier. It has given new securities to the mariner. It has spanned great rivers and estuaries with bridges of a form unknown to our fathers. It has guided the thunderbolt innocuously from heaven to earth. It has lighted up the night with splendor of day. It has extended the range of human vision. It has multiplied the power of the human muscles. It has accelerated motion. It has annihilated distance. It has facilitated intercourse, correspondence, all friendly offices, all dispatch of business. It has enabled man to descend into the depths of the sea, to soar into the air, to penetrate securely in the noxious recesses of the earth, to traverse the land, in cars, whirled along without horses, and the ocean in ships that run ten knots an hour against the wind. These are but a part of its fruits and of its first fruits. For it is a philosophy that never rests, which has never attained, is never perfect. Its law is progress. A point which yesterday was invisible is its goal today and will be its starting point tomorrow."

When these words were written no doubt there were many thinking people to whom this record seemed impossible of duplication, even if it did not to Macaulay. And yet at that time the first practical steam engine had been used but little longer than the Bell telephone of today has been in practical use; the first steamboat was no older than electric lights now are; the Morse electric telegraph was as much a novelty as wireless telegraphy now is, and travel by railroad was but a few years in advance of aerial navigation of today. Antiseptics and anti-toxins were among Macaulay's invisible points, and a demonstration of radio-activity would have been generally regarded as a manifestation of the Evil One.

Nearly all great scientific discoveries have been made by men who dreamed and experimented, rather than by those who were working solely for practical results; but their practical application largely has been made by the latter class. Sir Humphrey Davy invented a safety lamp, but the lamp has to be carried by the man who works in the mine and who must be taught how to use it with safety. Safety helmets have been invented by men versed in scientific knowledge, but the helmets must be worn by the heroes who risk their lives for their fellow men, and they must be trained in this use for their own safety. The establishment of this relief station is a great humane work by men of science; but the success will depend upon the men who are to be trained in it. Only by unreserved and ungrudging co-operation of the practical and the scientific can it be hoped to secure those results which we all desire and hope to see.

For the mine owners of Illinois, I welcome and accept the proffered assistance in the discharge of our duty to humanity, and dare to hope that it may mark the beginning and be one of the important elements of a new era in the conservation of human life and happiness in the coal mines of our great state.

ON STRIKE A YEAR AND LOST.

After a struggle of a year, the United Mine Workers in the Pardoe and Grove City section of the Butler-Mercer sub-district of Pennsylvania have applied to the Filer Company, operating five large mines open shop, for their old positions. The strike inaugurated by order of President Francis Feehan of District No. 5 in April, 1908, was declared off. The union men demanded the employment of a check-off man on the coal tipples. The company refused. The scale was not involved as the company pays the same as other operators in the district. About half the mines in the sub-district are operating open shop. The company has announced the old men will not be taken back.

GARY'S COKE PLANT BEGUN.

Work has been begun on the construction of 560 by-product coke ovens for the United States Steel Corporation plant in Gary, Ind. The ovens will supply ten blast furnaces with fuel and will consume 7,000 tons of coal daily. The gas from the ovens will be used for fuel throughout the plant and for consumption in the town of Gary. The greater part of the coal supply will come from West Virginia and Pennsylvania. The operation of the plant will probably be under the H. C. Frick Coking Company, and will take the place of ovens to have been erected at Filbert, Ralph and Sarah, Pa.

COLORADO COAL PRODUCTION SMALLER IN 1908

The total production of coal in Colorado in 1908, according to E. W. Parker, of the United States Geological Survey, amounted to 9,634,973 short tons, having a spot value of \$13,586,988, a decrease, as compared with the output in 1907, of 1,155,263 short tons, or 10.71 per cent, in quantity, and of \$1,492,461, or 9.90 per cent, in value. This is the second time in fifteen years that the coal production of the state for any year has shown a decrease as compared with that of the preceding year.

The total number of men employed in the coal mines of Colorado in 1908 was 14,523, and the average number of days worked by each was 212; the number of men employed in 1907 was 14,223, working for an average period of 258 days. These figures indicate that the supply of labor was greater in 1908 than in the previous year, but that the working time was materially reduced. The average production per man for the year was also reduced, although the daily output for each man employed increased. In 1907 the average production for each man employed was 759 short tons; in 1908 it was 663 tons. The average production per day per man was 3.13 tons in 1908, as compared with 2.94 tons in 1907.

Most of the larger mines of Colorado are operated on the basis of a ten-hour day. In 1908 there were 61 mines, employing 8,535 men, that worked ten hours; 79 mines, employing 5,158 men, that worked eight hours; and 3 mines, employing 63 men, that worked nine hours a day.

Returns for 1908 show that 211 mining machines were in use in that year, as compared with 175 machines in 1907. The machine-mined product, however, decreased from 1,689,517 tons in 1907 to 1,668,602 tons in 1908, although the proportion of the machine-mined product to the total increased from 15.66 to 17.32 per cent. Washing machinery has been installed at two plants in the state. The total quantity of raw coal washed in 1908 was 449,320 tons, yielding 336,123 tons of cleaned coal and 113,197 tons of refuse. All of the washed coal was used for coking.

Reports from the state coal mine inspector, Mr. John D. Jones, show that 61 men were killed and 115 injured in the coal mines of the state in 1908, as against 99 men killed and 138 injured in 1907. Of the non-fatal accidents, 29 were of a serious character and 86 of the injuries were of minor importance. By far the larger number, both of deaths and injuries, resulted from falls of roof in rooms.

According to M. R. Campbell, of the Geological Survey, more than 10,000 square miles of Colorado contain workable coal beds; 4,180 square miles may contain workable coal; and 2,820 square miles contain coal under heavy cover. It is estimated that these areas originally contained 371,700,000,000 short tons. The production of coal in Colorado up to the close of 1908 aggregated 122,303,309 short tons; and if it is assumed that for each ton of coal mined one ton was wasted, this production represents an exhaustion of 183,000,000 tons, or about 0.05 per cent of the estimated original supply.

COKE OPERATORS ARE AGREEING.

Representatives of 79 independent coke plants in the Connellsville and Klondike fields out of a total of 81, were present at a meeting at Uniontown, Pa., which was held to discuss the proposed merger of all of these interests into one great coke corporation which will have a capital of \$65,000,000 if the project goes through. John W. Boileau of Pittsburg, who is in charge of the matter, was present and

represented the syndicate that is organizing the combination.

Of the number of interests present it was stated that 90 per cent favored the consolidation and 80 per cent of those present had fixed a value for their properties, which represents what they will take in cash. It was explained that all of the options must be in the hands of the syndicate representatives by October 1 of the present year, and the new company would probably be ready to take over the properties, excepting live stock, stores and stocks in the same, by the first of next year.

PAINT CREEK FARMS OFFERED KANAWHA OPERATORS

The convention of the United Mine Workers of District No. 17, of West Virginia, who had met in Charleston, W. Va., April 20, to consider the demand of the operators of the Kanawha field for relief from present conditions, April 22 passed the following resolutions:

"Whereas, the operators in this district have appealed for relief at our hands in order to enable them to compete with the non-union fields, and, in view of the fact that our officials have signed a contract with companies who have violated the joint agreement entered into in April, 1908, and all the operators who were parties to the 1908 joint agreement were parties to the above demand, in justice to them, and in order to establish uniformity throughout the district and place all operators who are parties to the 1908 joint agreement on the same basis, therefore, be it

"Resolved, That we hereby grant all the operators working under the joint agreement of 1908 the same contracts that have been signed with the Paint Creek Collieries Co., the Standard Splint Coal Co., and the Great Kanawha Coal Co., and be it further

"Resolved, That efforts be at once made by the district officials to secure a settlement on the basis of the Paint Creek settlement with the companies who are at present violating the 1908 agreement; and, in the event of failure to settle, that the district executive board be, and is hereby authorized, and instructed, to inaugurate a strike at said places, and to levy an assessment on the membership of the district to carry on the same; and it is further instructed to petition the international executive board for financial assistance; and is further clothed with full authority to take whatever steps it deems necessary to carry into effect the above outlined policy."

This resolution was communicated to the Kanawha operators, but no definite action has been taken on the matter by the mine owners. Until they give the mine workers an answer to the proposition, the situation will remain practically as it now is.

A HUGE COAL CONCERN.

The Lackawanna Coal and Land Company, of Scranton, Pa., has been organized by F. W. Tibbetts and other Philadelphia and Scranton men and has acquired 22,500 acres of coal and surface in Clay and Nicholas counties, West Virginia, and will lease to operating companies on a royalty basis. The company has \$2,500,000 capital and the same amount of authorized bonds. The tract contains six seams of coal with a total of 300,000,000 tons.

COAL DUST CONDITIONS IN DEEP DRY MINES

Mine explosions are often greatly magnified and extended for very long distances, and may even be caused, by the presence of dry coal-dust in the roadways. Some kinds of coal produce much more dust than others. The dust from various classes of coal differs much in inflammability. Coal dust is most abundant in deep mines, because they are hot and usually dry.

The temperature of the strata increases with the depth. At about 50 feet from the surface, the ground has a constant temperature of about 50 degrees Fahrenheit and this increases, in descending, about one degree for every 60 feet. The air which enters a deep mine is therefore heated, except on hot summer days. Hot air will absorb more moisture than cool air, hence though the air be saturated with moisture as it enters the mine, it will absorb more moisture after becoming heated. In deep mines which do not yield much moisture, the surface of the roadways are thus dried by the air which is constantly passing in large quantity. In shallow mines, especially in summer, the air may deposit moisture on the surface of the roadways, by becoming cooler after entering the mine.

Large quantities of dust are produced at the working faces by the breaking of the coal. This mostly settles on the floor where the velocity of the air is slow. Coal dust exists in the most dangerous state, on the haulways over which the coal is carried. Should the loaded cars be hauled rapidly outwards, whilst the air passes at a high velocity inward, the sweeping of the air over the loaded cars raises a cloud of dust from them, says David Wilson, in a discus-

sion of this subject. The heavier particles settle on the floor, but the very fine and light particles adhere to the roof and sides and timbers which secure them. In course of time the main roads become coated with a thick layer of coal dust over their entire length. The dust on the floor is moved at intervals, because it fills up the road; that on the upper parts of the roads is like a thick covering of soot, and is not moved at all, but allowed to accumulate. It is this fine dust that is said to be most inflammable.

An inflammable mixture is formed by introducing one pound of this dust in 160 cubic feet of air. In an air-way of 64 feet area this would require that there should be one pound of dust deposited on the surfaces of every two and one-half feet of length of the roads.

These deposits of dust may be suddenly displaced and thrown into the air in a thick cloud, under certain circumstances. The rapid velocity of the air currents rather favor than prevent these accumulations of dust. The displacement of the dust may be caused by any great shock, such as is caused by a large fall of roof, the firing of a heavy shot, a blown-out shot, or by the rush of air produced by an explosion of firedamp and air, with or without coal dust.

It is believed that the products of combustion of certain kinds of explosives are an important factor in coal dust explosions, because it is possible that they form chemical compounds, by uniting with the carbon in the coal dust, thereby themselves becoming explosive. In an entry, where many heavy shots are fired in rapid succession, there is heat enough developed for this conversion.

ALABAMA FIFTH IN COAL.

The advance sheets of the annual publication of the coal and coke production of Alabama has been given out by the printers. The figures furnished by Chief State Mine Inspector Edward Flynn are used while H. A. Springer, mine accountant, contributes some very interesting data. There was a decrease in the production the past year as compared with 1909. The following figures are given of the bituminous production by the seven leading states:

Pennsylvania, 1907, 150,321,437; 1908, 120,257,150.

Illinois, 1907, 51,317; 1908, 50,000,000.

West Virginia, 1907, 48,091,583; 1908, 43,282,425.

Ohio, 1907, 32,142,419; 1908, 27,321,056.

Alabama, 1907, 14,250,454; 1908, 11,523,299.

Indiana, 1907, 13,985,713; 1908, 10,489,285.

Colorado, 1907, 10,790,236; 1908, 9,711,212.

United States total, 1907, 394,833,729; 1908, 331,932,186.

The production of bituminous coal in the United States in 1907 as against that of 1906 showed a gain of 18.39 per cent. A falling off in 1908 of 15.9 per cent is noted.

OHIO OPERATORS ORGANIZING.

Operators of the Pomeroy Bend coal district of Ohio have organized a district association and affiliated with the Ohio Coal Operators' Association, of which Howard D. Mannington is secretary. The Pomeroy district has been a shipper of coal by the river for some years, but it has only been in the last few years that railroad mines have been opened, and the territory extensively developed. It has now become quite an important coal production field and there are several good companies with the latest mining equipment operating in the district.

The name chosen was the Pomeroy Coal Operators' Association.

Frederick Ebersbach of the Peacock Coal Company of Pomeroy was elected president, and George H. Barker of the Maynard Coal Company of Columbus, secretary. H. H. Heiner, president of the Maynard Coal Company, was elected as representative of the district on the executive board of the Ohio Coal Operators' Association. The firms in the district which are members of the new organization are the Eby Coal and Mining Company of Gallipolis, the Saulsbury Coal Company of Toledo, the Noble Summit Coal Company of Middleport, the Pittsburg Mining Company of Pomeroy, the Pomeroy Coal Company of Columbus, the Maynard Coal Company of Columbus, the Riverside Coal Company of Columbus, the Silver Run Coal Company of Middleport, and the Harley Coal Company of Middleport.

OHIO AND THE HOCKING VALLEY ROADS.

Contending that there is no relation between the United States supreme court decision sustaining the commodities clause of the interstate commerce act, and the Ohio laws under which he is proceeding, Attorney-General U. G. Denman says he will push the state's cases against the Hocking Valley group of railroads to prevent the exercise of control over coal properties and the merger of the roads. For protection against violating the commodities clause of the interstate commerce law, the Hocking turned over to the Central Trust Company of New York all stock in the Sunday Creek Company. There was a stipulation that the trust should be permanent if the supreme court sustained the commodities clause, but to be terminated if the right of a railroad to own stock in a coal company was sustained. It is expected that the stock now will be returned to the Hocking treasury.

COURT IN A COAL MINE UNDERNEATH THE GROUND

In a suit brought by Mine Inspector John E. Curran, of the Eighteenth Anthracite district pending before the Schuylkill County Courts, Judge H. O. Bechtel adopted the novel expedient of transferring his court to the bottom of the Morea colliery, about 2,000 feet below the surface of the earth. Judge Arthur L. Shay and all the lawyers in the case accompanied Judge Bechtel, and deep down in the bowels of the earth questions were asked and answered just as in court, while the gigantic pillars, which are the cause of the controversy between Inspector Curran and the Dodson Company, stood as mute witnesses in the flickering light cast by the miners' lamps on the hats of the judges and lawyers. The suit is known as the "barrier pillar case" and was brought by Inspector Curran to save the lives of hundreds of miners whose safety will be menaced if he loses the case.

The Mill Creek Coal Company is operating the New Boston colliery on land immediately adjoining the eastern line of the tract upon which the Morea colliery is situated, the latter being operated by the Dodson Company. The gigantic barrier pillar between these two workings is now 210 feet wide, but the Dodson Company is driving a gangway into the pillar, which will reduce it in width, and consequently in strength. Inspector Curran is of the opinion that a narrower pillar will be insufficient for the safety of the miners, particularly if any of the workings should be abandoned and allowed to fill with water. For this reason he asked an injunction against the Dodson Company.

The case was in progress in regular order in court, when a difference of opinion became manifest among the experts as to the quality of the coal in the pillars. Some testified the coal was hard, while others said it was soft.

"Cannot I go down in the mines and satisfy myself on this question?" asked Judge Bechtel, who is anxious about the case because human lives are at stake. This proposition proved agreeable to James J. Moran, Inspector Curran's counsel, and was acted on. The court was below the surface eight hours.

INTERESTING SPECIMEN FROM MONTANA MINE

James Derham, manager of the Helena Fuel Company, recently received two specimens taken from the mines owned and operated by the Montana Coal and Iron Company at Bear Creek, Mont. One specimen is a block of petrified wood, about a foot and a half in height and ten inches in diameter. The block closely resembles the root of a tree, and weighs nearly seventy-five pounds. The other is a piece of coal about the same size and nearly the same weight as the petrified block, which has all the characteristics of a tree. Even the grains of the tree are plainly discernable.

COAL BEDS BURNING FOR AGES.

Through a long line of cliffs from Colorado to Central Utah, and then southwest toward Arizona, extensive beds of coal are found, and recent geological investigation into this coal formation has developed what may be termed burning mountains, or coal beds, a fire with surface indications of constant combustion for ages past. The coal fields of Utah are somewhat widely separated, and even the known fields have been comparatively little explored; therefore very little is known of their productive area.

The edges of these beds come to the surface in these cliffs nearly one thousand feet above the bordering desert, and in ages past this coal has burned into the mountain

cliffs until smothered by the accumulations of ashes and covering of superincumbent rocks; in places the heat of this burning coal has been so intense as to melt the rocks. From surface appearances the fires have gone out in these cliffs, but at one point in the canon of Prince River, where the coal is being mined, the rocks are found to be uncomfortably hot and the miners were compelled to retire for fear the fires would again break out.

Other coal fields lie in the desert west of Green River. At two places near tributaries of Fremont River the coals are burning, and have been without cessation since they were discovered by the earliest explorers. The origin of these fires has been the subject of much speculation.

THE WORLD OF SUCKERS.

The world is large, and big, and round,
And in its borders may be found,
Men of every color, creed and race—
Of every caste in every place,
Who answer to the swindler's game:
The world has dubbed them with a name,

Suckers.

Now they're a class, you can't deny,
That multiply but never die.
Perhaps 'tis Providence designed it so
That some must work and save the "dough,"
While others practice "high finance,"
And concoct schemes and games of chance
to catch the Suckers.

"A Sucker's born," says Barnum, "every minute."
Now I've a "hunch" that Barnum isn't in it—
I think his estimate by far too low,
And Barnum must be put down with the slow;
A certain scalper's got him beat a mile;
The one that's fishing all the while

for Suckers.

He's after them with bait and hook
In printed form which reads just like a book;
It tells of robber prices asked for coal,
Of "Robber Trusts" without a soul,
And thus it is they take the bait,
Then find out when it is too late,

they're Suckers

The prices quoted are so low,
Men with ordinary common sense should know.
If they would read and keep up with the times
They'd find the "niggah" hidden 'tween the lines;
And let their fellow neighbors see
That they are not what they're supposed to be.
the Suckers.

There is a rule of life they'd better take,
And so avoid the Sucker's fate;
Fight shy of wise guys you don't know,
Don't think that all you read is so;
For if you do 'twill surely come to pass,
That you'll be in that crowded class,

with Suckers.

I. C. Cuvellier in the Northwestern Coal Dealer.

The drillers in the oil and gas well at Potomac, Ill., have gone down about 750 feet, but no pay sand has yet been reached nor is there any evidence that there is anything of the kind in this locality. The only thing of any mineral value whatever is about a 20-inch vein of coal.

MINE EXPLOSIONS: THEIR CAUSE AND PREVENTION

An Address Delivered to the Mining Students at the Ohio State University, Columbus, Ohio, May 6, 1909,
by GEORGE HARRISON, CHIEF INSPECTOR OF MINES.

Having reached the season of the year when Nature is spreading over the earth her pleasing and welcome mantle of green, we can again as usual look back over the winter months, and as a result of gas and dust explosions alone, in our coal mines, regretfully recount the great number of victims whose charred and mutilated remains have been committed to their last resting place with the solemn and oft-repeated words of the officiating clergyman—"Earth to earth, ashes to ashes, dust to dust."

Notwithstanding the advancement made and knowledge gained, scientifically, technically and practically, by experience and costly exhaustive investigations and experiments in past ages, we seem to get no nearer the solution of the great problem of devising means to prevent those lamentable and too frequent occurrences.

Recently, whenever we hear of a mine explosion, the report is either accompanied with the statement, or the statement soon follows, that the mine where it occurred was a "model mine," and that "no cause could be assigned for the explosion." These statements are being so often repeated that practical men resent them, and are beginning to look upon the term "model mine" as a warning of danger; an ensign of some coming catastrophe, and a foretoken of all the horrifying scenes and sorrow that follow.

A "model mine" too often consists of an outward or surface display of fine, costly machinery and other equipments and supplies; in many instances more than necessary to enable those in charge of the mine to operate it in a manner that will protect the employes from all seen, and most unseen, dangers from mine explosions.

Equipment All Right, Conditions Neglected.

The experience of mine inspectors is that companies often provide costly equipment, abundantly capable of making model conditions in a mine. It frequently occurs, however, that some careless or indifferent mine manager, mine foreman or other subordinate, depends too much on the outside equipment and neglects the airways, ventilating doors and stoppings, and allows the lurking dangers to accumulate in or near the subterranean working places of the miners. When companies are willing to provide everything necessary to care for and protect the lives of their employes, and their property, and hire what are considered competent men to take charge, it is a grave reflection on some one that such calamities should occur.

Another feature in connection with mine explosions is that there are always a number of people ready to impress upon the public the idea that such calamities are unavoidable, and their cause a mystery beyond human skill to explain, just in keeping with the superstitions of past ages, that mine catastrophes, disasters at sea, epidemics amongst the people, and other calamities, were visitations of the vengeance of a justly-angered God, and a merited rebuke for the wickedness of the people.

There is no mystery about the cause of explosions in mines, and no logic in the argument that they are unavoidable. They are the result of accumulations of carburetted hydrogen gas and coal dust, in most instances the former being set in motion by contact with flame, and the explosion being increased and intensified by the ignition and explosion of the dust, to the extent of the amount of the accumula-

tion and the fixed carbon and volatile combustible matter contained in it.

The higher the carbon in coal dust, the more intense the heat, the greater the expansion of flame, and the more destructive the force.

Gas accumulates in mines from defective ventilation, the air current not being conducted to the interior of the mine on account of bad doors, leaky stoppings, blocked airways, or ventilating fans being stopped while the mines are in operation, as per the evidence adduced before the coroner's inquiry in the Marianna explosion in Pennsylvania last December. In the proper sense of the term, without fire there can be no such thing as a conflagration; without water, no such thing as a deluge.

If the ventilating fan is capable of producing the necessary current of air, and the ventilation in the mine is cared for as it ought to be, there can be no danger from accumulations of gas.

If coal dust is sprinkled when necessary, and removed from the mine as it should be, and not allowed to be thrown back on the gob piles, or used for ballast on the haulways (as it is in many instances), there can be no danger from accumulations of coal dust.

If coal is properly undercut and prepared before blasting, and the drill holes drilled and powder gauged with practical skill and good judgment, as they should be, there can be no fear of danger from blown-out shots.

Mine explosions are liable to occur at any season of the year, and under all weather conditions, but they more frequently occur in the winter season, during sudden changes of weather, especially with a low barometer, or rising thermometer, or both.

Atmospheric Changes as an Index.

Before safety lamps and ventilating fans became in general use in mines, old miners were very diligent in their observations in atmospheric changes, the theory being that a high atmospheric pressure had a tendency to press the gas back in the strata in mines and reduce the flow for a time below the normal amount generated; but just as steam rushes from a steam boiler when the weight on the safety valve is reduced, as soon as the barometer began to fall, and the pressure was relieved, the extra amount of gas pent up by the heavy pressure suddenly flowed from the joints and fissures in the coal and roof, and the furnace power was so affected by the reduced pressure, and probably also by a rise in the temperature at the same time, that the air current was diminished and inadequate to dilute the extra flow of gas, thus permitting gas to accumulate and increase the liability of an explosion.

As great an authority as Hopton, in his "Conversation on Mines," says: "The greatest danger is when there is a sudden fall in the barometer, and a sudden rise in the thermometer, at the same time." This theory has been well established, and is not questioned by real, practical mining men.

The principle and adoption of fan ventilation in mines is a great improvement over the old system of furnace ventilation, and is well calculated to overcome the effect of sudden changing weather conditions on the ventilation and safety or danger in the operation of mines, especially mines generating dangerous quantities of fire-damp.

If a barometer and thermometer were placed at every mine, and closely observed, particularly in the winter season, by the engineer who has charge of the ventilating fan, and the speed of the fan increased or reduced as weather conditions indicate it should be, the general public would not be so often horrified by the unnecessary slaughter of human life in the mines, and there would be fewer widows and orphans to weep over the burned and blackened bodies, and lament the untimely loss of their bread-winners.

The use of safety lamps in gaseous mines is recently being vigorously advocated by many theorists, and by some practical men as the panacea against mine explosions. After using safety lamps for over half a century, it would appear inconsistent to decry their use, especially having the greatest confidence in their reliability and the dependence that can be placed in them as a means of protection to life when conditions require their use.

A safety lamp, however, unless its properties and uses, and the danger of tampering with it, are generally understood, is like the insulation on a highly charged electric wire in a mine; it is a danger in disguise. Sir Humphrey Davy and others conferred a great boon on the mining communities in foreign countries when they invented and perfected the safety lamp for use in gaseous mines, but in some respects they have been an additional danger, and through their misuse, thousands of miners have been launched into eternity without a moment's warning, which ought not to have been if too much dependence had not been placed on the safety lamp, and too little attention given to the unnecessary accumulation of large and dangerous volumes of fire-damp.

Like the model equipments on the outside of a mine, too much confidence and dependence is placed on the safety lamp. With a monster and costly ventilating fan on the outside, and safety lamps on the inside of a mine, mine foremen and others are prone to feel secure from danger, and neglect their most important duties in looking after the safety of lives and property under their supervision and care.

The Use of Safety Lamps.

Safety lamps can and may be used to great advantage in leading headings in gas-producing mines, especially where such places are raising rapidly, and it is difficult to conduct a large volume of air to dilute and render harmless such gases, or in crossing clay veins or faults where feeders of gas are usually encountered, and even in such cases they should be placed in the hands of men selected for their good judgment, experience and carefulness, but to introduce them in a general way is placing them in the hands of a very large majority of men, especially in this country, who know nothing of their properties or uses, and placing the lives of every employe in the mine in the hands of every individual who enters it, and ought not to be done without the most careful and serious consideration, and that only when the flow of gas is so great that it cannot be reached and dispersed by a volume of air. It is much better to prevent the intrusion of the murderous burglar than to encounter a conflict against the deadly weapons with which he is always provided after he has gained access to a residence.

An adequate, and never-ceasing volume of pure air conducted throughout the interior excavations of a mine, and the prevention of the accumulation of the elements of danger by a strict and constant vigilance on the part of those intrusted with the management, is a much safer, less expensive and more satisfactory way of preventing mine catastrophes than creating an incentive for careless indifference to danger, that permits the accumulations of the elements of danger by providing scientific appliances to be depended on to counteract the destructive force of such

elements after they have been unnecessarily allowed to accumulate. Strike at the root, remove the primary cause of mine explosions, and there will be no necessity to search the pockets of the dead miners, after an explosion, to find if they were carrying pipes, smoking-tobacco, and matches, to the mine, as a subterfuge to relieve some one who had neglected an important duty, from grave and serious responsibility.

In a railroad wreck, an investigation usually discloses the fact that it was caused by a neglect of duty; a violation of orders; a broken rail; an open switch, or a defective joint; but in a mine explosion (fortunately for some people), the evidences as to the cause are usually obliterated by the force and destructiveness of the explosion, and the unsuspecting public is advised that such occurrences are unavoidable, and no cause for them can be assigned, when if the truth could be known there is little doubt that there was an "open switch," or in other words, a woeful want of necessary discipline and proper observance and application of law.

In addressing an audience of young mining engineers and students of mining, on whose care and management in future the vast mining interests of this and other states, to a considerable extent, may depend, I feel that I cannot too earnestly impress upon you the great responsibility that mine managers assume, and how careful and conscientious they should be in the performance of all the duties pertaining to the position, and how watchful of the protection of the lives and property under their charge.

The Use of Electricity in Mines.

Without going into details, let me also impress upon you that the general use of electricity in mines; the use of coal-cutting machinery and high-speed haulage methods, as well as the increase in the number of deep shaft mines, with reckless methods of mining and excessive use of flame-producing explosives, are all factors of danger, that under favorable circumstances and conditions very materially affect the atmosphere of mines, and often-times cause serious and dangerous vibrations of the ventilating current, increasing the liability of mine explosions if the treacherous foe is lurking around, ready at first opportunity to prey upon his unsuspecting victims.

It is impossible for any one man to possess a competent knowledge of all the essential features that enter into and affect the operation of mines. The man who is most successful, and most capable and trustworthy, is the man who is always willing to learn from any source, theoretical, technical or practical, and who is possessed of that admirable trait of character enabling him to realize how little he knows, and how much he has yet to learn; and seeking to supply that supposed want of knowledge by extra watchfulness and never-ceasing fidelity to duty.

Now my young friends, there are two very important things I wish to imprint on your minds: First, that it is much better to remove, or prevent, the accumulation of the demons of danger in a mine by the practical methods well known to practical men, than to allow them to accumulate, and combat the danger by scientific appliances, and lastly, I would be failing in duty and unmindful of the many lives that are at stake, were I not to implore you to renounce at every opportunity, the false, deceptive and dangerous doctrine that "mine explosions are unavoidable, and their causes beyond the power of human skill to explain."

J. D. McInnes, formerly superintendent of two mines at Clinton, Ind., succeeded Herbert Wooley as superintendent of the Dering mines, recently taken over by the Brazil Block Coal Company. Mr. Wooley has not announced his plans. The various mine bosses gave Mr. Wooley a gold watch and fob as a token of their feeling toward him.

WHAT THE GREAT HAVE WRITTEN OF MOTHERS

Mother's Day, which has taken root in many parts of our country, was the suggestion of Miss Anna Jarvis of Philadelphia, whose idea it was that on the second Sunday in May a white carnation be worn in honor of—Mother. Few are the great men or women who have failed to leave on record some tribute to mothers for what they have done and suffered.

"All that I am or hope to be," said Lincoln, after he became President, "I owe to my angel mother."

"My mother was the making of me," said Thomas Edison. "She was so sure of me I felt I had some one whom I could not afford to disappoint."

"To the man who has known his mother all women are sacred for her sake," said Jean Paul Richter.

"All that I have ever accomplished in life I owe to my mother," said Dwight L. Moody.

A Mother is a Mother still,
The holiest thing alive.

—Coleridge.

Who ran to help me when I fell,
And would some pretty story tell,
Or kiss the place to make it well?
My Mother.

—Jane Taylor.

Youth fades; love droops; the heavens of friendship fall;
A Mother's secret hope outlives them all.

—O. W. Holmes.

A woman's love is mighty; but a Mother's heart is weak,
And by its weakness overcomes.

—Lowell.

In the Heavens above,
The angels whispering to one another
Can find among their burning terms of love
None so devotional as that of Mother.

—Edgar Allan Poe.

For the hand that rocks the cradle is the hand that rules the world.

—William Wallace.

A kiss from my Mother made me a painter.—Benjamin West.

I have not wept these forty years; but now
My Mother comes afresh into my eyes.

—Dryden.

The only love which on this teeming earth
Asks no return for passion's wayward birth.

—Hon. Mrs. Norton.

A Mother's love—how sweet the name!
What is a Mother's love?
A noble, pure, and tender flame,
Enkindled from above,
To bless a heart of earthly mold;
The warmest love that can grow old,—
This is a Mother's love.

—James Montgomery.

God could not be everywhere; therefore He made Mothers.—Lew Wallace.

What matter if the cheek show not the rose,
Nor eyes divine are there, nor queenly grace?
The Mother's glory lights the homely face.

—Sir Lewis Morris.

Backward, turn backward, O time, in your flight,
Make me a child again, just for to-night!
Mother—come back from the echoless shore.

—Elizabeth Akers Allen.

Womanliness means only Motherhood:
All love begins and ends there.

—Robert Browning.

I miss thee, dear Mother, when young health has fled,
And I sink in the languor of pain!
Where, where is the arm that once pillowed my head,
And the ear that once heard me complain?

Other hands may support me, gentle accents may fall;
For the fond and the true are still mine.
I've a blessing for each; I am grateful to all;
But whose care can be soothing as thine?

—Eliza Cook.

The tie which links mother and child is of such pure
and immaculate strength as to be never violated, except
by those whose feelings are withered by vitiated society.—
Washington Irving.

One tear of a mother can blot out a thousand complaints
against her.—Alexander.

There is none, in all this cold and hollow world,
No fount of deep, strong, deathless love, save that within
A Mother's heart!

—Mrs. Hemans.

The Mother with her needle and her shears,
Gars [makes] auld claes look amaisht as weel's the new.

—Robert Burns.

To a Mother a child is everything; but to a child, a
parent is only a link in the chain of her existence.—Lord
Beaconsfield.

My Mother! Manhood's anxious brow
And sterner cares have long been mine;
Yet turn I to thee fondly now,

As when upon thy bosom's shrine
My infant griefs were gently hushed to rest,
And thy low whispered prayers my slumber blessed.

—George W. Bethune.

Absent many a year—

Far o'er the sea, his sweetest dreams were still
Of that dear voice that soothed his infancy.

—Southey.

If I were hanged on the highest hill,
Mother o' mine, Oh Mother o' mine!
I know whose love would follow me still,
Mother o' mine, Oh Mother o' mine!

—Kipling.

As Life's dedalian paths my footsteps tread,
And sorrow trails its pall about my head,
Entwining in its purple shades my feet,
I sometimes think—and, O, the thought is sweet!—
That though to women men may not be brothers,
We still have left a few old-fashioned Mothers.

—Elaine Darling.

Can the fond Mother from herself depart,—
Can she forget the darling of her heart,
The little darling whom she bore and bred,
Nursed on her knee, and at her bosom fed?

—Churchill.

The loss of a Mother is always felt. Even though her
health may incapacitate her from taking any active part in
the care of her family, still she is a sweet rallying point,
around which affection and obedience and a thousand tender
endeavors to please, concentrate; and—dreary is the blank
when such a point is withdrawn.—Lamartine.

A Mother's love the best love;
God's love the highest love.

—German.

WASHED SLACK

Virginia wants to levy a tax of 2 cents a ton on all coal mined in the state.

William H. Smith was appointed receiver of the Royal Gorge Coal and Fire Clay Company by District Judge Champion at Canon City, Colo.

Jellico Coal Company of Knoxville, through James A. Maynard, its attorney, prays for a receiver for the Brantner Coal Company, a local retail corporation.

The Lone Star Coal Company has secured the coal right under 40 acres of land near Harvey and have started on the work of drilling. It is nearly certain that coal will be found.

J. Sanford of the Carnegie Coal Company has been making an inspection tour of coal docks and dock sites at the head of the lakes in order to get acquainted with the situation there.

One hundred mine drivers at Pottsville, Pa., have decided to organize a union and 96 signed the charter. They will demand \$14 a week for driving a two-horse team and \$11 for a single-horse team.

One hundred and sixty acres of Carbon county, Utah, land, said to be rich in anthracite coal, was purchased by Frank N. Cameron of Salt Lake through the local United States land office for a consideration of \$12,000.

While drilling two thousand feet below the surface of the ground in search of the famous Nisqually coal vein, near Ashford, in Pierce County, Wash., the mining crews employed by James A. Moore struck a vein of clean, coking coal eight feet wide.

Schedules of the assets and liabilities of Solomon Claybon, coal dealer, who was forced into the Bankruptcy Court at Cincinnati, O., were filed. His liabilities are given at \$3,467.64. His assets consist of a gold-plated watch and chain valued at \$5, and household goods valued at \$30.

At the coal mines of the Big Creek Coal Company at St. David, Fulton County, Ill., 300 coal miners have walked out and refuse to work because the company of which Charles I. Pierce of Kewanee is the head has installed two coal mining machines and brought on new men to operate them.

President Lewis of the United Mine Workers of America sent Board Member Rogers of Idaho to Fernie, British Columbia, to assist Board Member Morgan in settling the coal strike. The operators are standing firm for the open shop and reduction of wages. A coal famine seems imminent. Many farmers are burning fence posts.

Owing to the large amount of coal on hand in mild weather, and the over-production in the winter months, a number of the anthracite coal companies have issued orders suspending work at their washeries for an indefinite period. These washeries produce small sizes only, and the coal company officials report that there is such a large supply of small coal on hand and such a light demand that it would be folly to produce more.

Coal interests in the Oaxaca field will have a competitor in the Harriman fields in the state of Sonora. He states that the Mexican government has just renewed the concession given four years ago to E. H. Harriman and associates. It is the present intention of the Harriman interests to build a branch line from Tonachic station on the Cananea, Yaqui River and Pacific to the coal fields, this concession having been already arranged.

The Hazleton Shaft Colliery of the Lehigh Valley Coal Company, employing 400 hands, suspended for several months, and extensive repairs will be made.

The O'Gara Coal Company has resumed operations at the Noble mine, south of Cambridge. This will give employment to about two hundred and fifty miners.

The Clark Coal and Coke Company of Peoria, Ill., has secured the coal rights under 700 acres of land in Lime-stone township for \$50,000 and will start mining June 1st.

The Philadelphia and Reading Coal and Iron Company issued orders May 3 suspending all operations after Wednesday night, working only three days each week until further notice.

The mines of the Rosemont Coal Company at Rosemont, near Grafton, Md., have resumed work after a long period of idleness and 100 men are employed. The output will be 700 tons a day.

Coal dealers in Waltham, Mass., are greatly disturbed because the Waltham Watch Company, which employs about 4,000, has announced that it will sell hard coal to the heads of families at cost.

The celebrated McCracken vs. Mexican Coal and Coke Company suit that has been pending at Sabinas, Mex., for years has at last been decided in favor of the defendants, the Mexican Coal and Coke Company.

The Kelley mine at Rayland, W. Va., employing sixty miners has closed down for an indefinite period. The mine entrance has been boarded up and it is understood that it will not be operated until the coal business is brighter.

John F. Gump and A. L. Delaney have sold to a party of Greene County, Pa., men headed by J. M. Scott, a tract of coal land in Clay district, near Mooresville, W. Va., and it is understood that the new owners will shortly begin extensive developments.

After laying idle for almost two ——— the Blackhawk Coal Company, at Jasonville, Ind., has commenced work again and will employ about 200 men. Lattas Creek mine has commenced work again after being shut down two weeks to put in a new set of screens.

John B. Steel, of Greensburg, Pa., has closed a deal whereby he becomes the owner of 1,200 acres of coal in the Captina Valley, Belmont County, O., in the center of the Pittsburgh basin. The purchase gives him control of approximately 8,000 acres in Belmont County.

The Lehigh Valley Coal Company reopened the old South Sugarloaf and Stockton No. 8 workings at Hazleton, May 15, after an idleness of 10 years. South Sugarloaf was abandoned because it was thought the coal in it had been exhausted. Stockton was shut down through some dispute over the terms of the lease with the land owners.

Another big railroad and coal development made possible by the commodity clause decision is the opening up of the large tract south of Pittsburgh known as the Little Kanawha holdings. This property was purchased jointly three years ago by the Pennsylvania, New York Central and the Baltimore & Ohio for about \$10,000,000 from the Little Kanawha syndicate.

D. B. Fleming and Sampel Slade have sold their third interest in the Scandia coal mine to the Carney Bros., of Carney, Wyo. The Scandia mine is one of the largest in the district near Des Moines and it is understood that the consideration named in the transfer of the third interest

is in the neighborhood of \$50,000. The Carneys are also interested in the Saylor, Coaldale and Anderson mines, which lie to the north of the city.

The property of the Spencer Butte Coal & Petroleum Company was sold at sheriff's sale at Eugene, Ore., for \$438.79. The property consisted of 160 acres of land and tools and machinery.

The Wholesale and Retail Coal Dealers' Association of Ohio, which has its headquarters in the Brunson building, is making elaborate preparations for the annual convention which will be held in Toledo June 22, 23 and 24. Headquarters will be at the Hotel Secor.

It is believed that the most promising petroleum field yet discovered in Cape Colony is located at Zwart Kops, near Port Elizabeth, where one well has already been sunk about 2,000 feet. In the district of Carnarvon, also, there are surface indications of petroleum, and a well is being sunk in this district.

Consul-General William H. Michael, of Calcutta, states that the United Turnyo Oil Company, with a capital of \$1,666,666, has been registered in Rangoon, with their permanent office at Yinangyaung. It is the intention of the new company to exploit oil fields at Yinangyaung and other

places, and also to act as refiners and general merchants and transporters.

The mine fire, started in the lower workings of North Mahanoy colliery April 4, is under control, and is expected to be extinguished shortly. All the lower levels of the mine are flooded with water to a height of 110 feet, and the water allowed to stand for several weeks.

In 1907 Oklahoma produced 3,642,658 short tons of coal, valued at \$7,433,914. The state ranked fourteenth among twenty-eight coal producing states. Only three other states showed a greater percentage of increase over the production in 1906, and 8,398 men were employed in Oklahoma mines.

To mine coal primarily for distribution among its own members, the Knights of Industry, a co-operative organization which recently established a branch in Colorado Springs, Colo., has practically closed a deal for the purchase of 80 acres of the M. L. Dorr property, six miles north of that place, for \$12,000.

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NOTES ON THE PETROLEUM INDUSTRY.

The La Campaña Petrolos del Pacifico, with headquarters at 165 Calle Bandera, Santiago, Chile, has been boring for oil in the Province of Carelmapu, about 500 miles south of Valparaiso, with fair results. The work has been in charge of D. H. MacMillen, an American engineer. A depth of 1,050 feet has been reached without finding any body of petroleum, although indications point strongly toward favorable results, for at several points layers of clay and sand were found impregnated with petroleum.

* * *

The world's output of petroleum last year amounted to 234,270,000 barrels, of which the United States produced 165,870,000 barrels, occupying the foremost position, while Russia produced 40,800,000 barrels. Japan occupies only the seventh rank, her output being 470,000 barrels, having increased from 250,000 in 1907. But the domestic product is far from being sufficient to meet the home demand, and therefore it is a matter of prime necessity at present to import a large quantity.

* * *

According to official returns, Japanese imports last year amounted to 1,010,000 cans of illuminating oil, valued at \$7,131,360, and 9,670,000 cans of crude oil at \$208,800. In fact petroleum forms an important item in the list of imported articles, hence the importance of developing the petroleum industry so as to meet the home demand, and if possible, to make exports to foreign countries.

* * *

Statistics of United States and Russia show that the former has bored to the depth of 3,000 feet and the latter to that of 3,500 feet, while the deepest well in Japan is only 2,040 feet. The outlook for new oil fields is regarded as very hopeful. When all these circumstances are taken into

consideration, the output for next year will supply 70 per cent of the home demand, and for the year after next the demand for refined oil, amounting to 10,000,000 cases, will be met by the home output and the import of oil will be practically stopped. The next step in the forward movement will be the export of oil to Manchuria and Korea.

* * *

Petroleum is now being imported to a limited extent into Chile from California, and used as fuel by the Taltal Railway, about 500 miles north of Valparaiso. Others have under consideration the use of petroleum for fuel, and it seems there should be a good opening since coal is very high and large quantities are imported.

* * *

The production of petroleum in Roumania in 1908, according to figures furnished by Consul-General Norman Hutchinson, of Bucharest, amounted to 1,147,727 tons, an increase as compared with 1907 of 18,630 tons. The exports of petroleum and its derivations in 1908 were as follows, by countries and tons: France, 118,603; United Kingdom, 105,664; Egypt, 79,943; Turkey, 31,401; Germany, 31,174; Italy, 23,103; Belgium, 19,040; India, 18,901; Netherlands, 16,950; Austria-Hungary, 7,027; Algeria, 3,491; Norway, 3,105; all other countries, 2,302; total exports, 460,704 tons.

* * *

Boring operations on the town lands at Harrismith, Orange River Colony, South Africa, have revealed the presence, at a depth of 160 feet, of a seam of petroleum shale 15 to 18 feet in thickness. Beneath this is a deposit of freestone, largely impregnated with petroleum. The prospects are considered to be most encouraging. It is reported that the Caledonian syndicate which owned this property has sold its interest to a new London company with a capital of \$486,650 to work the property.

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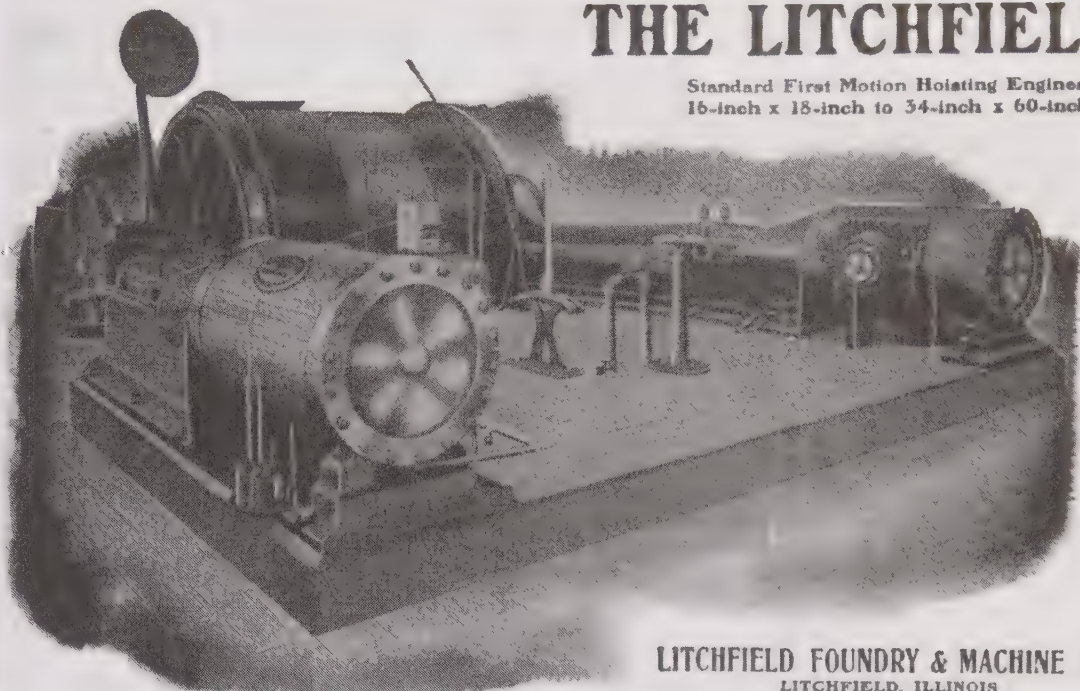
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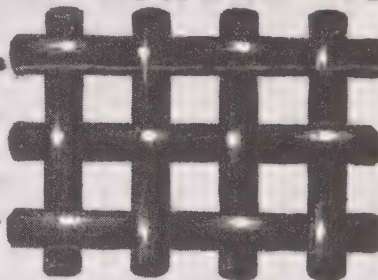
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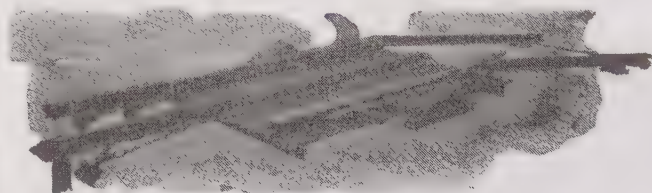
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A. L. SWIFT, C. W. & V. Coal Co. G. E. W. TRAER, East States Coal Co.
CHAS. A. STARNES, West End Coal Co. J. D. PETERS, Chicago & Cart's Coal Co.
D. SIMPSON, Consolidated Coal Co.

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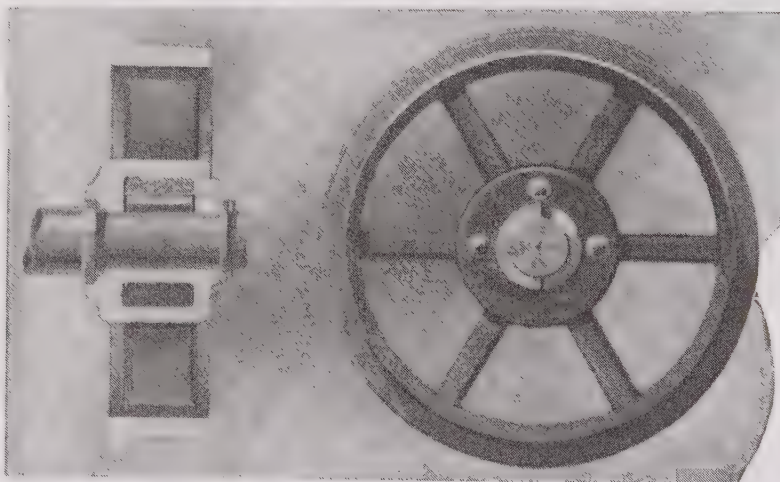
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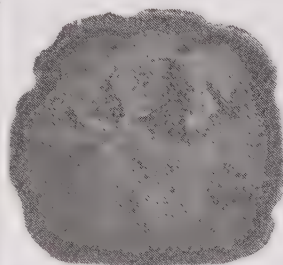
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WASHED SLACK

Work on the new coal washer at the Smith Lohr coal mine, Springfield, Ill., is progressing very rapidly.

Missouri railroad commissioners made an order suspending the taking effect of the proposed new schedule on shipment of coal from May 15 to June 10.

The foundation for the hoisting engines at the Lovington, Ill., coal shaft is almost completed. The engines and boilers and all other machinery will be installed at an early date.

The Kelley Run colliery, Shenandoah, Pa., operated by the Madeira Hill Coal Company, of Philadelphia, which was shut down on April 1 for general repairs, has resumed operations.

Capt. E. T. Slider, of New Albany, Ind., has leased his towboat E. T. Slider for an indefinite period to the Frankfort Coal and Elevator Company to haul coal on the Kentucky river.

A company is prospecting for coal on the Hitchcock farm, four miles south of Pana, Ill., and has reached a depth of 200 feet, going through the limestone. The work is being done by the Albert Hargrave Company.

Accused of cutting coal at the mines on days when the collieries are idle, Joseph Scick was held up and severely beaten by foreigners at Mahanoy City, Pa. Several others were also beaten, and others threatened, unless they desist.

The Continental Coal Corporation, James Building, Chattanooga, Tenn., has purchased Blackbear Coal Mining Corporation; the properties include town of Blackbear, Bell county, Kentucky. The mine has a capacity of 200 tons daily.

The Alwart Brothers Coal Company won a partial victory in Municipal Judge Cottrell's court in Chicago when four of the charges begun against the company by the city sealer under the shortweight ordinances were dismissed. One other charge was continued till June 19 for hearing.

Arrangements have been completed for the formation of the Consolidated Coal Company of Fairmont, W. Va. It will comprise the five big companies already operating there, the majority of the stock of each company having been owned by the Fairmont Coal Company. The capital of the new company will be \$40,000,000.

The contract for furnishing coal to the Illinois Central Railroad lines in Kentucky for the year beginning April 1 has been closed. The coal operators of western Kentucky, who supply the coal, agreed to a reduction. For some years the price to the road for run-of-mine has been 90 cents a ton. The new contract price is 80 cents a ton.

Shipments of coal and coke over the Pennsylvania Railroad lines east of Pittsburgh and Erie for the week ending May 1 amounted to 988,597 tons, an increase of 192,233 tons compared with the same week in 1908. Since January 1 the shipments aggregated 16,801,345 tons, an increase of 1,789,958 tons in comparison with the corresponding period last year.

The exports of anthracite and bituminous coal from Philadelphia during April showed a decided increase in the former as compared with the corresponding month last year. The following table gives the amount for the month compared with April, 1908: Anthracite—1909, 12,230 tons; 1908, 6,744 tons; value, 1909, \$51,426; value, 1908, \$19,125. Bituminous—1909, 59,341 tons; 1908, 58,830 tons; value, 1909, \$162,136; value, 1908, \$162,951.

The wage cut demanded by the operators in the Central bituminous coal field of Pennsylvania has been refused by the miners.

State Mine Inspectors John Verner and Edward Sweeney state that Iowa's coal output for the year ending June 30 will be 8,000,000 tons.

The Meadow Lands mine of the Meadowlands Coal Company at Canonsburg, Pa., has closed down indefinitely, throwing 400 men out of work.

The Tompkins Coal & Land Company, of Columbus, has purchased coal lands near Roseville, O., worth about \$72,000, and will open two mines at once.

The Lone Star Lignite Company of Como, Tex., N. Watelsky, Dallas, Tex., president, will double present capacity of coal mines, which is 10 cars daily; expenditure, \$3,000.

New Mexico produced nearly 3,000,000 tons of coal last year, her mines receiving a full quota of miners for the first time in several years, owing to the depression of the industry elsewhere in the country.

Stockholders of the Clearfield Bituminous Coal Corporation at their annual meeting elected William C. Brown a director to succeed W. H. Newman. Five other directors and three inspectors of election were re-elected.

Coal loading on the Chesapeake & Ohio Railway in the Kanawha field for April amounted to 527,020 tons, an increase of about 42,000 tons over March. Inland shipments amounted to 463,670 tons. A total of 3,480 tons of coke was shipped.

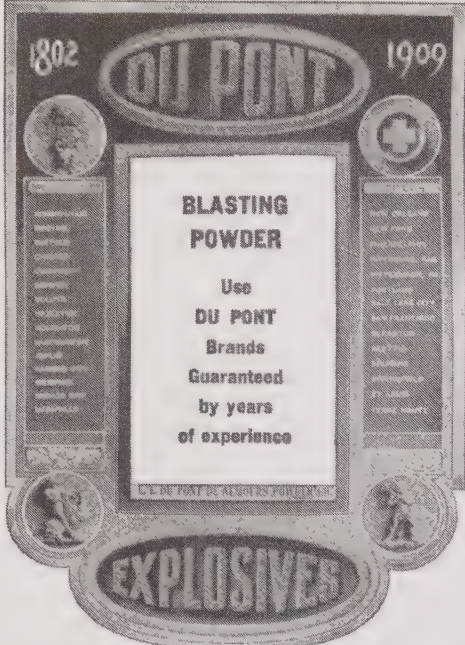
The drillers for coal have been at work on the Zimelman land west of Boone, Ia. They are down about 250 feet. They do not say much about it, but the impression is that they are finding some very good coal. Robert Heaps has charge of the work.

The Miami Coal Company, which now has four mines in the Ehrmandale and Cloverdale fields, east of Terre Haute, will shortly begin to sink two mines in the 1,400-acre tract bought by them a few months ago, about three miles south of Clinton.

A Bridgeton, Pa., paper explains that the fact that hundreds of farmers are coming into Bridgeton with tin cans, jugs and bottles has no significance so far as liquor is concerned. The men are said to be after coal tar at the gas plant. Corn planting is now being done, and the seed is dipped in this so that birds and insects will not destroy it.

Coal operators in the Irwin district manifest signs of an early resumption that will put the mines on full time. The demand is growing better weekly, especially among the mills and other establishments using steam coal and slack. Mountains of the latter were piled up during the past year, but at several of the big collieries it is being loaded by means of carriers as fast as cars can be dispatched.

The Ohio State Mining Commission is again at work formulating its report for a revision of the mining laws of Ohio. The commission has been working for almost a year and expects to have its report completed by the end of the year, so that the governor may submit it to the coming general assembly. As the commission is composed equally of mine owners and mine workers, there is, of necessity, much trouble arriving at decisions on many points, but it is believed that finally the commission will be able to present a unanimous report to the governor.



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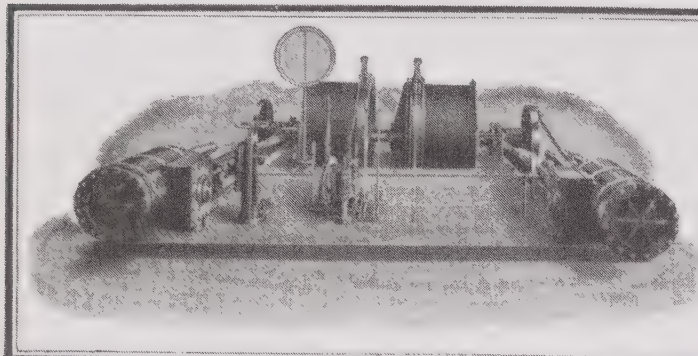
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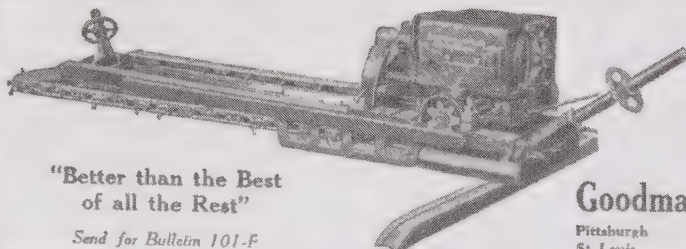
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FUEL

A WEEKLY JOURNAL DEVOTED TO COAL, COKE & KINDRED INDUSTRIES

Vol. XIII. No. 4.

CHICAGO, ILL., MAY 25, 1909.

Price \$3 Per Year.

PROGRESS OF LEGISLATION AT SPRINGFIELD

Miners' Qualification Law Has Gone to the Governor, While the Mine Investigation Commission Bill and the Mining School Bill are in Apparently Satisfactory Condition—Ten-Hour Day for Women and Other Pending Labor Legislation.

The progress of legislation at Springfield for the week was fairly satisfactory, though not as rapid as might have been desired, of course especial reference is here made to the legislation affecting the coal mining industry. The Miners' Qualification Act is in the Governor's hands, and will be signed, if not signed by the time C. & S. C. is printed.

The bill establishing the Mine Investigation Commission is in satisfactory condition, being on its third reading in both houses and beyond the amending stage. It carries the full amount asked, \$25,000, and is also one of the measures that may pass at any session. Some verbal and other corrections were made to better the measure, which is now satisfactory to all its friends.

The Mining School bill is in the hands of one appropriation committee and has had a favorable report in the other house, and is regarded as sure to pass with the amount appropriated reduced to \$7.00 for the first trial. If the school proves useful, which there can be no doubt of its doing from the first, there will be no trouble anticipated in securing larger amounts for future years.

* * *

One very bad bill got through the House during the week—the bill which does away with the fellow-servant act and makes the jury sole judge of the facts in personal liability suits. A similar bill is pending in the Senate, and the ultimate fate of the proposed legislation can not now be foretold.

The Lederer bill, which passed the house by a vote of 84 to 43, has brought the assembly into a mix-up on hazardous machinery legislation. The senate has already passed a bill which was framed by the special commission that investigated the subject last year, the material point of difference between the two measures lying in the fact that the Lederer bill does not require employes in factories and workshops to examine their machines each day before they go to work and to report whether they are in safe and proper condition. Lederer maintains that this feature of the commission's bill is a "joker" which was inserted in the interests of the manufacturers. In speaking of his bill he raised the contention that the "joker" in the senate bill would put the burden of showing that the machinery is not safe upon the employe instead of the employer and would remove the liability of the employer. The question now is whether the house will pass the senate bill or whether the senate will pass the house bill, or what will be done.

The Senate has passed Senator Jones' bill establishing

a ten-hour day for women employes in mechanical establishments. This bill, which passed the Senate 42 to 0, is modeled on the Oregon law, which has been upheld by the United States Supreme Court, and represents the outcome of one of the bitterest controversies that has raged at the state-house this session, the participants being the Illinois Manufacturers' Association on one side and the representatives of women's labor unions on the other. The bill went in first as an eight-hour measure, and was on the senate calendar on order of second reading before the manufacturers discovered it. Then the fires of contention were lighted. Public hearings were held and the fight progressed merrily. Senator Glackin tried to serve as mediator by proposing a nine-hour bill as a compromise, but this was rejected, and at length it was decided to put the bill through as a copy of the Oregon measure, which has withstood attacks in the courts.

The first attempt to but the bill through in this form failed; Senator Jones then shot in a new bill copied from the Oregon statute and when this came up in judiciary committee, an amendment was passed changing it back to an eight-hour bill.

Much bitterness was displayed and charges were made by Senator Jones that the manufacturers, who first fought the eight-hour measure, had changed their ground, and, in the fear that a ten-hour bill would pass both houses, had sought to get it changed back to eight hours in the hope that the house would deem it too drastic and would promptly affix it on the spike. The bill which passed the senate reads:

* * *

Section 1. That no female shall be employed in any mechanical establishment or factory or laundry in this state more than ten hours during any one day. The hours of work may be so arranged as to permit the employment of females at any time so that they shall not work more than ten hours during the twenty-four hours of any day.

Section 2. Any employer who shall require any female to work in any of the places mentioned in section 1 of this act more than the number of hours provided for in this act, during any day of twenty-four hours, or who shall fail, neglect or refuse so to arrange the work of females in his employ that they shall not work more than the number of hours provided for in this act during any one day, or who shall permit or suffer any overseer, superintendent or other agent of any such employer to violate any of the provisions of this act, shall be guilty of a misdemeanor and upon conviction thereof shall be fined for each offense in a sum not less than \$25 or more than \$100.

Section 3. The state department of factory inspection shall be charged with the duty of enforcing the provisions of this act and prosecuting all violations thereof.

tamped, at a gallery temperature of 77° F., into a mixture of gas and air containing 4 per cent of methane and ethane and 20 pounds of bituminous coal dust, to be arranged in the same manner as in test 2. This limit charge is to be repeated five times under the same conditions before being established.

NOTE.—At least 2 pounds of clay tamping will be used with slow-burning explosives.

Washington, D. C., January 9, 1909.

In response to the above communication applications were received from 12 manufacturers for the testing of 29 explosives. Of these explosives, the 17 given in the following list have passed all the test requirements set forth, and will be termed permissible explosives.

Subject to the conditions named below, a permissible explosive is defined as an explosive which has passed gas and dust gallery tests Nos. 1, 2, and 3 as described above, and of which in test No. 4 1½ pounds (680 grams) of the explosive has been fired into the mixture there described without causing an ignition.

Permissible explosives tested prior to May 15, 1909.

Brand.	Manufacturer.
Ætna coal powder A.....	Ætna Powder Co., Chicago, Ill.
Ætna coal powder B.....	Ætna Powder Co., Chicago, Ill.
Carbonite No. 1.....	E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 2.....	E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 3.....	E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 1 L. F.....	E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 2 L. F.....	E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Coal special No. 1.....	Keystone Powder Co., Emporium, Pa.
Coal special No. 2.....	Keystone Powder Co., Emporium, Pa.
Coalite No. 1.....	Potts Powder Co., New York.
Coalite No. 2 D.....	Potts Powder Co., New York.
Collier dynamite No. 2....	Sinnamahoning Powder Co., Emporium, Pa.
Collier dynamite No. 4....	Sinnamahoning Powder Co., Emporium, Pa.
Collier dynamite No. 5....	Sinnamahoning Powder Co., Emporium, Pa.
Masurite M. L. F.....	Masurite Explosive Co., Sharon, Pa.
Meteor dynamite	E. I. Du Pont de Nemours Powder Co., Wilmington, Del.
Monobel	E. I. Du Pont de Nemours Powder Co., Wilmington, Del.

Provided:

1. That the explosive is in all respects similar to the sample submitted by the manufacturer for test.

2. That double-strength detonators are used of not less strength than 1 gram charge consisting by weight of 90 parts of mercury fulminate and 10 parts of potassium chlorate (or its equivalent), except for the explosive "Masurite M. L. F.," for which the detonator shall be of not less strength than 1½ grams charge.

3. That the explosive, if in a frozen condition, shall be thoroughly thawed in a safe and suitable manner before use.

4. That the amount used in practice does not exceed 1½ pounds (680 grams) properly tamped.

The above partial list includes the permissible explosives that have passed these tests prior to May 15, 1909. The announcement of the passing of like tests by other explo-

sives will be made public immediately after the completion of the tests for such explosives.

A description of the method followed in making these and the many additional tests to which each explosive is subjected, together with the full data obtained in each case, will be published by the Survey at an early date.

NOTES AND SUGGESTIONS.

It may be wise to point out in this connection certain differences between the permissible explosives as a class and the black powders now so generally used in coal mining, as follows:

(a) With equal quantities of each, the flame of the black powder is more than three times as long and has a duration three thousand to more than four thousand times that of one of the permissible explosives, also the rate of explosion is slower.

(b) The permissible explosives are one and one-fourth to one and three-fourths times as strong and are said, if properly used, to do twice the work of black powder in bringing down coal; hence only half the quantity need be used.

(c) With 1 pound of a permissible explosive or 2 pounds of black powder, the quantity of noxious gases given off from a shot averages approximately the same, the quantity from the black powder being less than from some of the permissible explosives and slightly greater than from others. The time elapsing after firing before the miner returns to the working face or fires another shot should not be less for permissible explosives than for black powder.

The use of permissible explosives should be considered as supplemental to and not as a substitute for other safety precautions in mines where gas or inflammable coal dust is present under conditions indicative of danger. As stated above, they should be used with strong detonators; and the charge used in practice should not exceed 1½ pounds, and in many cases need not exceed 1 pound.

Inasmuch as no explosive manufactured for use in mining is flameless, and as no such explosive is entirely safe under all the variable mining conditions, the use of the terms "flameless" and "safety" as applied to explosives is likely to be misunderstood, may endanger human life, and should be discouraged.

THE NORTHWEST COAL RATE CONTEST.

That West Virginia coal operators are endeavoring to make inroads on the trade of Pittsburgh operators in the Northwest was indicated last night when the railroad officials of the West Virginia carriers met the Ohio Coal Traffic Association in this city to discuss putting in through coal rates from West Virginia fields to St. Paul. The Ohio Coal Traffic Association is composed of the railroads operating through Ohio. It was stated that no agreement was reached and that the proposition had been abandoned, but local operators do not seem to believe it. The differential rate from West Virginia has not met with favor from other localities and there is likely to be an unusual struggle for a readjustment of the present rates. Pittsburgh operators promise to make matters interesting in what promises to be a three-cornered fight in which Pittsburgh, Ohio and West Virginia operators will be participants.

COAL MINING INSPECTORS' INSTITUTE.

The Coal Mining Inspectors' Institute of America is scheduled to meet in Scranton, Pa., beginning June 8. The executive board will convene June 7. The program for this meeting has not yet been announced, but the local arrangements are being made by the inspectors of the anthracite region.

SOME PLEASING SIGNS OF THE TIMES

Some stimulus is added daily to the coal and coke trade. Confidence seems to have been restored and indications point to continued improvement. The firing of in the neighborhood of 1,000 coke ovens the third week of May by the Frick interests is a good indication of the trend of the times. Independent operators generally follow the lead of the larger corporations and there has been gradual recovery from the depression of the past 18 months. The proposed merger of independent coke concerns so far had had but little effect upon operations, but as the time approaches for the closing of options it may be expected some of the independents will curtail expenses and unless the market price of coke is boosted, may reduce production to a minimum, consistent with expenses. At the close of last week the Frick company was operating approximately 60 per cent of their ovens, five days a week. Ovens belonging to the furnace interests, 50.5 per cent, averaging five days and the independent concerns 61.5 per cent of their ovens, averaging five days' work during the week.

* * *

Orders have been sent out by the Gould interests to rush work at all repair shops, so all of the equipment will be in good condition to handle the lake coal tonnage, beginning June 1. W. W. Keefer, formerly manager of mines of the Monongahela River Consolidated Coal & Coke Co., who has been elected vice-president and general manager of the Pittsburgh Terminal Railroad & Coal Co., has taken active charge of the properties along the West Side Belt Railroad, and it is expected that the seven mines will be in full operation by the first of next month. This property was leased to the Pittsburgh Coal Co. some years ago, but the agreement was canceled recently and the Gould interests will now mine the coal. Delivery of the 500 steel hopper cars for the Wabash Pittsburgh Terminal lines has been started by the Standard Steel Car Co.

* * *

W. J. Hamilton, vice-president in charge of sales of the W. J. Hamilton Coal Company, returned recently to Columbus from a trip to Chicago, where he had been looking over the situation in the soft coal trade. Mr. Hamilton said that he found all the men connected with industrial lines in Chicago quite optimistic and confident that by July 1 there would be a heavy demand for steam coal. The big plants in the Chicago district are getting into full operation, and their officers are anticipating big business the closing half of the present year.

* * *

The Consolidation Coal Company will in the near future erect the largest business building in Fairmont. Just how soon the construction work on the building is started depends upon the progress in working out the preliminary plans. The plans are now being worked out by one of the very best architects in the United States. It will be exclusively an office building. There will be no arrangements for store rooms nor similar business enterprises. It will be built of brick and eight stories in height. A bank will occupy the first floor.

* * *

The Carnegie Coal Company of Pittsburgh may build a new coal dock on the Superior bay front of St. Louis bay, at Superior, Wis. J. A. Sanford, a representative of the company, and other interested parties, have recently been in Superior with a view of selecting a site. Should the proposition go through, a dock will be erected capable of handling 500,000 tons of coal annually. It will be built on the order

of the coal docks on the Atlantic coast, which differ from those at the Head of the Lakes. The site which is said to be favored is in the vicinity of the Great Northern railroad's Superior dock.

* * *

The Pittsburgh Coal Company has fired the coke ovens at its Grindstone plant and is completing the Colonial plant at the same place as rapidly as possible.

* * *

Coal mining in the regions surrounding Barberton, Ohio, is experiencing a decided boom, in spite of the depression in other parts of the country. Three new mines will be opened in a short time and one has already been opened and is in operation.

* * *

Daylight mining of anthracite coal is to be started on an extensive scale at St. Clair, near Pottsville, Pa., where the St. Clair Company Wednesday awarded to Contractor Thomas Nolan, of Reading, the extensive work of stripping off the surface earth from the mammoth vein. Millions of tons of coal can be secured ultimately in this way, although the largest steam shovels in the country will be at work on the preliminary excavations for six or seven years.

* * *

H. A. Barkhausen has had Greiling Bros. Company begin the building of a large new coal dock on property he owns just south of the Chicago & Northwestern railroad bridge on the west shore of Fox River, at Green Bay, Wis., and some time during the summer it will be ready for the storage and handling of coal. The dock when complete with the latest devices for handling coal, will cost over \$100,000. The Lyle Construction Company of Chicago holds the contract to build the dock proper and erect the steel work.

* * *

The Ohio Valley Coal Mining Company started its coal mine near Evansville, Ind., recently and several hundred men were given work. The mine had been closed several weeks because of slack work.

* * *

The Thomas coal mine in Union county, Ky., which closed sometime ago because of slack work, has resumed operations. The coal mine at De Koven, Ky., also started running again and several hundred men returned to work.

* * *

The Mt. Pleasant Coal & Coke Company at its plant located on the Isaac George and St. Xavier's farms near Latrobe, Pa., started 100 ovens recently, the company having received orders sufficient to keep them going.

* * *

The Ohio Fuel Supply Co. within the next ten days will begin work on the construction of an 18-inch main from Sugar Grove to the West Virginia fields, a distance of 80 miles. It is estimated that the cost will exceed \$1,000,000. The new line is for the purpose of meeting the demands of the distributing agents in Columbus and at Cincinnati, Norwood, Springfield, Cambridge, Xenia and other points. The line will cross the Ohio River at Ravenswood, W. Va.

* * *

Orders have been issued by the H. C. Frick Coke Co. to fire 1,000 additional coke ovens in the upper and lower Connellsville regions. Practically all the coke consumed by the United States Steel Corporation is produced by the Frick company, and the general resumption at the big coke plants is due to the increased production at the furnaces.

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Official Paper of the Western Kentucky Coal Operators' Association—I. P. Barnard, president, Louisville; F. P. Wright, vice-president, Bevier; D. Stewart Miller, commissioner, Owensboro.

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Vol. XIII. Chicago, Ill., June 1, 1909. No. 5.

Heart's Desire.

Bishop William A. Quayle.

As for me
May I be sung to
By the sea;
And my soul
Let it be clung to
By Life's whole.

For my Brain,
Let it be talked to
By God's rain.
My life's mart
Let it be walked through
By God's heart.

And as for me,
Let me be sung to
By God's sea.
Still for me,
Let me be clung to,
Lord, by

The Illinois legislature at its present session has enacted the following laws which the people demanded:

The new Illinois senator has many friends in the coal trade and will certainly not lose any of them in his new position. It is his success as a congressman that has caused his advancement. His life is a tribute to his innate merit, and he may well be, if he is not, proud of the honor now given him—the highest possible to any citizen not born within the borders of the United States. And not the least tribute to William Lorimer is the fact that the men who worked by his side when he was just beginning his career are universally pleased that he has attained his present position.

ABOUT ALL FROM SPRINGFIELD NOW.

The election of a United States Senator having been concluded, the present General Assembly of Illinois took the time to pass a few bills, but not a great many. Perhaps, if they had passed just a few that did not pass, we could forgive them that they did not pass the greater part of them. It can be said at all events that they did not enact much pernicious legislation—and that counts for something.

The very bad employers' liability bills failed, which is something to be thankful for. The coal industry is especially interested in the fact that two bills passed which are of prime importance to the industry as a whole. These are the bills establishing the school of mines and mining and the bill establishing the mine investigation commission. From these two a great deal is confidently expected, and their passage marks a great step forward for the coal industry of this state.

It is too early to sum up what has been done, but later FUEL will have more to say about some of the measures.

THE DAY OF REMEMBRANCE.

Nearly fifty years have passed since the vast armies gathered from all the states and went to conflict. To-day comparatively few of those marching and fighting hosts are alive to recall the events of the years of struggle, and even the survivors have given place to their sons, now past the prime of life, and to their grandsons, already in the lead in affairs of the world to-day. Yet the celebration of an anniversary dedicated to remembrance still assumes an annual importance sufficient to make it a general holiday and is marked by ceremonies mete for the occasion. The observance draws fewer each year, and as the number who survive grows smaller, so will the number remembering the day in a public way also grow smaller and smaller year by year. It is not forgetfulness perhaps, not indifference, not even the stress of other duties; it is simply the way of mankind. Two generations constitute a long period of remembrance as such things go, and while the gradual neglect of the custom may grieve those who suffered most keenly, still it is inevitable. Memorial Day with the North and Decoration Day with the South have already come together in date, and in many cities the graves of the Blue and the graves of the Gray are decorated together by the men and women of both, or by the survivors of either. This is as it should be. No

longer is there any national feeling of hate or resentment, nor any general unloving recollection of the days long gone by. In a few the scars of bygone days still show, and in a few hearts still glow the fires of enmity, but with us as a nation community of interests and community of spirit have emphasized the unity of the people. The flowering vines have covered the ruins of the breastworks where men fought, and in the muzzle of the long-discarded and unused gun the bluebird has built her nest.

PERSONAL

A good many of the Chicago coal men are deeply interested in the reelection of Judge Charles M. Walker to the circuit court bench, and are pointing to his record on the bench during the last six years, in conjunction with his splendid services as corporation counsel of Chicago from 1899 to 1903, as indicating that his reelection is a matter of good citizenship, regardless of politics. Judge Walker will receive a large support from the coal men.

* * *

A farewell banquet was tendered W. W. Keefer last night at the Fort Pitt Hotel by the members of the Monongahela River Consolidated Coal and Coke Company. Mr. Keefer, who has been general manager of the above company for a great many years, is retiring from it to accept the vice-presidency of the Pittsburgh Railway Terminal Coal Company. S. A. Scott, assistant general manager of the Monongahela Company mines, was toastmaster. Mr. Keefer was the recipient of several gifts from various members of the company, among them being a handsome match safe and a diamond and pearl cigar cutter. Members of the company and many of the old miners were in attendance.

* * *

B. S. Hamill, formerly general sales agent of the Monongahela River Consolidated Coal and Coke Company, well known here, who resigned this position to accept that of general agent of B. Nicoll & Co., New York, which company has been appointed the selling agency for the Pittsburgh Terminal Railroad Company, says that the possibilities of coal originating on the Pittsburgh Terminal Railroad Company are considerably greater as far as shipping is concerned than any coal lying on any individual road in the Pittsburgh district.

URUGUAY IMPORTING COAL.

F. W. Goding, U. S. consul at Montevideo, makes a report on the importation of coal into Uruguay, and suggests that American dealers secure a share of the trade. During the year 1905, the latest figures obtainable, 136,454 tons of coal, valued at \$1,411,251, were purchased in Uruguay. Of this quantity the United States supplied about 15,000 tons, the balance being English and Welsh coal. No American firm since 1905 has attempted to secure this trade, although the prices are good, leaving a liberal margin for profit after deducting the cost and freight. The cities importing this coal are, in the order of their importance, Montevideo, Rio Negro, Paysandu, Colonia, Salto, and Soriano. Montevideo took over 80 per cent of the entire amount. Inducements are being offered by local companies desiring coal, in the way of contracts and a guaranteed return freight for the steamers. The duty on coal, including extras, is about 61 cents per ton.

COAL MINING INSTITUTE OF WEST VIRGINIA

The following papers are promised for the summer meeting of the West Virginia Coal Mining Institute, which meets at Elkins, W. Va., June 1 and 2:

Opening address by the president, followed by an address from Hon. W. E. Glasscock, governor of West Virginia, Charleston, W. Va.

"The Progress in Government Investigation of Mine Explosions," Dr. J. A. Holmes, expert in charge, U. S. Geological Survey, Washington, D. C.

"The Humidity of Mine Atmosphere," Frank Haas, Assistant General Manager, Fairmont Coal Company, Fairmont, W. Va.

"The Undeveloped Coal Wealth of West Virginia," Hon. W. A. MacCorkle, ex-governor of West Virginia, Charleston, W. Va.

"The Equipment of the U. S. Explosive Testing Station and the Preliminary Results of Tests," Clarence Hall, explosive expert, U. S. Geological Survey Testing Station, Pittsburgh, Pa.

"The Relation Between the Quantity of Air and the Percentage of Gas in Advance Air Currents," John Gordon Smyth, chief engineer, Fairmont Coal Company, Fairmont, W. Va.

"Coke Making from Kanawha Gas Coal," D. T. Evans, manager, Mt. Carbon Colliery Company, Ltd., Powellton, W. Va.

"The Reduction of Mine Fires," A. G. Morse, department of railroads and mines, American-LaFrance Fire Engine Company, Elmira, N. Y.

"The Electrical and Coal Mining Industries," F. C. Albrecht, head of mining department, Pittsburgh district, Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.

"History of Rescue Apparatus," W. E. Mingramm, Draeger Oxygen Company, New York City, N. Y.

"The Value of Efficient Engineering in Coal Mining," L. B. Abbott, chief engineer, Consolidation Coal Company, Frostburg, Md.

INCREASE IN COKE PRODUCTION.

Connellsville, Pa., May 20.—Production and shipments of coke from the Connellsville field took a spurt last week. Production showed an increase of 8,000 tons, as compared with the previous week, while the increase in shipments amounted to 450 cars.

It is expected that the report for the present week will show a larger increase, as the action of the H. C. Frick Coke Company in putting into operation 1,000 additional ovens has caused a boom. Officials of the Frick company have been through the region this week on an inspection tour with the aim, it is believed, of getting additional plants in shape for more extensive operations.

The total production for the week was 253,000 tons and the total shipments 9,180 cars.

STRUCK AGAINST MONTHLY PAY DAY.

Objecting to the inauguration of the monthly pay, 250 miners at the Black Betsy mine on the Kanawha and Michigan are out on a strike. The indications point to a fight to the end, although the district officials have the case under consideration. The management of the Black Betsy mine, it is said, objected to such a large number of miners refusing to work following pay-day, and in order to ameliorate the condition announced that monthly pays would be established instead of the two weeks' pay as heretofore.

COKE FROM ILLINOIS AIDS WAR ON SMOKE

Significant alike in the interests of a smokeless city, as well as in the development of a vast manufacturing future, was the arrival in the city of the first carload of coke made from Illinois coal ever shipped to Chicago. The coke was manufactured in Franklin county from fuel taken from the mines of W. P. Rend, who is interested in the problem of smokeless fuel and who has been experimenting with coking coals from local mines, hoping to discover a coal that would produce coke satisfactory for steam-generating purposes.

Col. Rend, who has had extensive experience with coking coal in Pennsylvania, is inclined to believe that the Illinois product will produce a coke as satisfactory to local manufacturers as that produced in the Pennsylvania and West Virginia fields. "A partial solution for the smoke problem lies in the substitution for coal of coke made from western coal," he said in discussing his experiments. "Several experiments have been made on the Illinois Central Road with this coke with somewhat satisfactory results. It is my intention to build several coke ovens in Franklin county in order to experiment further with the manufacture of coke.

"I am already satisfied from the experiments that much coal in southern Illinois can be converted into coke suitable for steam generation. It will be necessary to have a specially prepared coke for this purpose, one which is only partly burned. Coke is generally baked seventy-two hours in the oven in order to secure the proper density and hardness. In my judgment a soft coke would be preferable for purposes of generating steam—one that is baked only about twenty-four hours or long enough to expel that part of the volatile matter containing the soot.

Gives Less Labor to Fireman.

"Soft coke is easier fired and gives less labor to the fireman, but costs about 15 per cent more than coal. However, it makes a steady, fierce heat, catching fire the moment that it is thrown on, and burning with a clear white flame. Years ago I manufactured a soft coke at my mines in Pennsylvania which was used with satisfactory results on the tug boats here in the Chicago river and in Cincinnati on the switching engines. I believe that this coke will prove as satisfactory.

"There is a big question as to whether or not coke could be entirely substituted for coal in the generation of steam and the experiments which I am about to conduct are for the purpose of ascertaining that.

"Aside from the interest in finding a fuel that would eliminate smoke is that of discovering a cheap fuel near at hand for use in blast furnaces. At present the two fields that supply coking coal are in Pennsylvania and West Virginia, but I believe we have in Illinois coal that will give us a satisfactory coke as cheaply as they have in Pittsburgh."

It is reported that fairly satisfactory experiments have been made at Gary and Joliet in the steel mills and blast furnaces with Illinois coke and raw coal also, and that further tests are to be made with the Franklin county product.

TRADING COAL FOR STAVES.

Something new in transportation was accomplished by William F. Wolfner of the National Cooperage and Wooden Ware Company, of Peoria, Ill., recently, when he completed a deal for the shipping of coal to the Southwest on the boats now bringing two million of staves to Peoria. "We have usually gotten our staves by rail," said Mr. Wolfner, "but Arkansas has never received our coal, so I believe we have

boosted a little for Peoria when we rounded up this transaction."

Mr. Wolfner has been figuring for months on saving freight rates on the millions of staves used annually by the local concern from the Southwest. Railroad rates were too high and he planned for water transportation. Finally he closed an arrangement for a shipment. Then he figured how he could still lower the cost by a shipment of something in return. In but a very short time he had succeeded in selling two barge loads of coal to Arkansas concerns at market figures, and by this means has materially reduced the cost for freight on his staves. Peoria incidentally gets the benefit.

THE COAL MEN'S PICNIC AT CLEAR LAKE, IOWA

Following is the program of the coal men's picnic, to be given at Clear Lake, Iowa, so far as it has been arranged:

- 9:30 a. m. Gathering of the Coal Clans and their ladies at the city dock.
- 10:00 a. m. All aboard for a sightseeing trip around the lake on the Arawanna, Princess, Burt, Ideal, Star and Oakwoods launches.
- 11:30 a. m. Dinner served in outdoor picnic style.
- 12:15 p. m. Band concert by Cady and Kennedy Brass and String Orchestra.
- 12:45 p. m. Address of welcome by Mayor Hollster; response by S. Clausen.
Song and recitation by Glee Club.
Short talks by Secretary G. H. Reeves of the Northwestern Retail Coal Dealers' Association; Secretary Laird of the Iowa and Nebraska Association, and by Secretary Wells, Western Grain Dealers' Association.
A few words from mine operators and dock managers of Chicago and the Northwest.
Election of officers.
- 1:30 p. m. Contests: Water pull between wholesale and retail coal dealers; ladies' water coal time-picking contest; water punting stunt; ladies' row boat race; log rolling contest and exhibition by experts from the Northwest of the Great Mississippi River Drive; climbing greased water pole; fat man's boat race; children's boat race; coal guessing contest; men's boat race; ladies' water running race; tug of war on water between wholesalers and retail coal dealers.
- 5:30 p. m. Return of boats to the city.
- 7:30 p. m. Band concert in public park.
- 8:30 p. m. Grand coal men's ball and entertainment in the covered pavilion on the lake.

The games and entertainments are free to all members' wives, families and sweethearts. The prizes consist of solid silver teaspoons, souvenir spoons, fishing outfits, reel and rod, hand-painted berry sets, rugs, tables, chairs, and cigars. These have been donated at a cost of over \$5 a piece by different coal companies and coal journals.

Saturday, June 19th, there will be fishing contests for all members and families, and a trip to the Mason City Northwestern States Portland Cement Co.'s mammoth works, returning in the afternoon to Clear Lake. A game of baseball will be played in the afternoon between a picked team of coal men and the Clear Lake Reds. At 8:30 a wrestling match in connection with the grand ball and entertainment is planned.

THE QUESTION OF COAL RATES IN THE SOUTH

The long-expected railroad rate war between the Kentucky-Tennessee field on the one hand and the Virginia coal fields on the other hand, has been launched, says the Knoxville Journal and Tribune.

It has been learned that a private meeting of coal operators of the Kentucky-Tennessee field was held in Knoxville a few days ago, when the rate question was discussed, a resolution passed and a committee of five leading coal operators appointed to carry out the provisions of the resolution.

In all probability the question will have to go before the Interstate Commerce Commission for the reason that the commission has already had a part in applying a differential in rates as they affect a part of the complaint and also for the reason that it is desired that the commission shall, in the general readjustment sought, change the rate which it already has made.

Coal Creek, Tenn., and Appalachia, Va., are the two points on which rates are based. In the contention, which is to be made by the Kentucky-Tennessee coal operators, two gateways to the Southern market are to be considered—i. e., Morristown, the gateway to the Southeast through which coal from both territories moves over the Southern Railway, and Atlanta, for the more Southern market, through which coal passes over both the Southern and the Louisville & Nashville railroads.

The distance from Appalachia to Morristown, according to the present route of the Southern, is 159 miles, while the distance from Coal Creek to Morristown is 73 miles. The rate at which coal is hauled from Appalachia to Morristown is seven mills per mile, while the rate from Coal Creek is twelve mills per mile.

The distance from Appalachia to Atlanta is 389 miles, while Coal Creek is 228 miles. The present rate means that coal is hauled to Atlanta from the Virginia mines at four mills per mile, while the cost from Coal Creek is six mills per mile.

But mileage alone is not what makes the difference in rates, and the coal operators who have inaugurated the movement for a change, claim that the conditions aside from mileage are such that no other basis can justly be applied. For instance, they cite that the production of coal in southwestern Virginia, by reason of thicker veins and nature of the coal, costs far less than it does to produce coal in the Coal Creek or other Kentucky-Tennessee fields. While Coal Creek enjoys a mileage advantage, it is claimed that the Virginia mines enjoy a natural advantage, the one advantage to be an offset to the other, leaving, as these operators claim, the merits of the question to rest upon the application of a rate according to a rate according to mileage alone.

If the cost to railroads of hauling coal to Morristown and to Atlanta is to be taken into consideration in fixing rates, then it is claimed by the Kentucky-Tennessee operators that they would be entitled to another advantage. In the decision of the Interstate Commerce Commission with reference to the Black Mountain case, the commission is of record as saying that the cost of assembling coal at Appalachia is much greater than the assembly of coal at Coal Creek. The grades of the Southern by its present routes, if taken into the consideration of the expense of haulage to the railroad, would be in favor of Coal Creek from Coal Creek on to the points mentioned as compared with Appalachia from Appalachia to the points.

While it is stated that it is the intention of the coal operators to ask the Southern and the Louisville & Nashville railroads to adjust rates according to the claims of the operators, it is admitted that it will be necessary to petition the Interstate Commerce Commission with reference to rates which it has already established. The whole question will therefore have to be brought up before the commission and for this reason the railroads may not feel called upon to act until the commission has concluded.

This rate question as between the Kentucky-Tennessee coal fields and the Southwestern Virginia fields as related to the Southern market promises to be a question fruitful of much discussion for some time to come not only because of the action which the operators are now taking but also because of the construction of railroads, and the sort of rate which the C. C. & O. will finally adopt.

GEORGIA COAL MINING MUCH DEPRESSED IN 1908

The total production of coal in Georgia in 1908 was 264,822 short tons, having a spot value of \$364,279.

Few states suffered more acutely from the financial depression of 1908, so far as coal production is concerned, than Georgia, the output of the state decreasing from 362,401 short tons in 1907 to 264,822 tons in 1908, a decline of 97,579 short tons, or 26.93 per cent, while the value fell off from \$499,686 to \$364,279, a decrease of \$135,407, or 27.1 per cent. The output in 1908 was less than in any year since 1899 and can be attributed almost entirely to the depression in the iron trade, which particularly affected the production of high-grade coals and the manufacture of coke. The quantity of coal made into coke decreased from 141,031 short tons in 1907 to 71,452 tons in 1908—almost exactly 50 per cent. Of the total decrease in the state's coal production in 1908, 71 per cent was in the quantity of coal charged into ovens for the manufacture of coke.

The number of men employed in the coal mines of Georgia in 1908 was 670, who worked an average of 261 days, compared with 808 men for an average of 262 days in 1907 and 737 men for 279 days in 1906. The efficiency record of the laborers in the coal mines of Georgia can not properly be compared with that of other states, however, as a great number—considerably more than half—are convicts leased by the state to the mining companies. Most of the men worked nine hours a day, but the statistics of production show that the average output per man each day during 1908 was only 1.51 tons, compared with 1.71 in 1907 and 1.62 in 1906. The average production per man for the year was 395 tons, compared with 449 tons in 1907 and 450.6 tons in 1906. This low efficiency is explained by the fact that the convicts employed in the mines have had no experience as coal miners except during the periods of their incarceration. Where convicts are employed the operations are not subject to interference by labor troubles.

There are no undercutting machines in use in the mines of Georgia. At one plant washing machinery is employed, and in 1908 79,000 tons of coal were washed, yielding 71,452 tons of cleaned coal and 7,548 tons of refuse.

A 38-inch vein of coal has been struck 108 feet below the surface at Onaway, Iowa.

ANTHRACITE HIGHER—READING OFFICIAL TELLS WHY.

Reasons why the cost of producing and the selling price of coal have risen were given by W. J. Richards, vice-president and general manager of the Reading Coal and Iron Company, at the continued hearing before the referee in the government's suit against the coal roads.

In the course of his testimony Mr. Richards declared that even the patient mules which plod in and out of the collieries had aided and abetted the rise in the cost of the anthracite fuel. He asserted that the hybrids cost more now—and that the feed, hay, oats and so forth, which they consume also eats more into the receipts of the operators than it did once upon a time.

The chief reasons given by Mr. Richards for the higher cost of mining were as follows:

The great depth at which coal now is mined, especially in the Schuylkill district. There the Reading Coal and Iron Company, he said, is now mining coal at a depth of 1,800 feet, and comparatively little coal is now left for the opening of new operations anywhere in the field that will be secured at a less depth than 1,000 feet.

The increased cost of labor following the strike awards of the national commission appointed by President Theodore Roosevelt.

Led on by questions of Judge Campbell, counsel for the company, Mr. Richards told of the increased wage cost since May, 1900, to 1902, and to 1909, resulting largely from the increased wages paid to contract and "company men" of his concern.

Taking the 1900-02 strike periods, and from November, 1902, to March, 1903, and from 1903 to 1909, when the strike wage awards were felt by the company, Mr. Richards said the average labor cost had jumped from \$1.35 to \$1.57. He declared labor's cost had jumped about 16 per cent, following the strike award of 10 per cent increase for contract men.

"The price of coal is increasing," said he. "Before the 1900 strike the men had a sliding scale and were entitled to a 6 per cent increase. The strike award made it 16 per cent in the Schuylkill field, and the 'company men' were to have a day of nine hours instead of one of ten. The general result was that 43 cents a ton represented the total of increases since the 1900 strike."

Taking the decade from 1898 to 1908, Richards made the surprising statement that on account of the increased wages and increased output the total wages of the company's men had jumped from \$8,164,836 in 1898 to \$15,785,527 in 1908, an increase of 61 cents a ton. The difference in the cost of mining coal had jumped from \$1.827 in 1898 to \$2.14 in 1908, an advance of 32 cents.

The cost of labor, supplies, royalties, improvements and general expenses was included. On a ten-hour basis the average for "day men" in 1898 was \$1.67, in 1908 \$2.28.

Besides, said Mr. Richards, the strike had caused a falling off in tonnage, and the company suffered loss from fire, flood and paucity of water.

The bugaboo of "coal exhaustion" was raised by Richards, who said mining was exhausting the coal deposits by 70,000,000 tons a year, and deeper coals must be relied on, with more expense.

"We are producing," said Richards, "an article that cannot be manufactured and does not grow."

The Kanantz-Hadley Coal Co., of Arcadia, Kan., have sold their coal works south of Arcadia to Joshua Martin, who will continue operations.

NEW ENTERPRISES

Laconia Coal & Ice Co., Salem, Mass.; capital \$50,000. President, G. J. Guvy; treasurer, N. J. Guvy.

Tampa Peat Fuel Co., Tampa, Fla.; capital \$100,000. S. Borchardt, president; J. G. Hanby, vice-president.

Vernon Oil & Coal Co., Vandalia, Ill.; capital \$10,000. Incorporators—H. D. Rynum, F. M. Smith, G. E. Norris.

Jacob Best Coal Co., Chicago, Ill.; capital \$4,000. Incorporators—Jacob Best, Hulda Best and Max W. Goltz.

West Frankfort Coal Co., Rockford, Ill.; capital \$40,000. Incorporators—Thos. Horn, D. M. Parkhill, Jesse Dimond.

Terminal Coal Co., Camden, N. J.; capital \$10,000. Incorporators—Wm. N. Lawton, Chas. H. Briggs, H. T. Harris.

Traeger Coal Co., Brazil, Ind.; capital \$1,200. Directors—W. W. Traeger, Jno. H. McLaughlin and Sam. R. Traeger.

Glenwood Coal & Coke Co., Wilmington, Del.; capital \$400,000. Incorporators—T. J. Smith, M. E. Smith, A. P. Stevenson.

Standard Briquette Fuel Co., St. Louis, Mo.; capital \$100,000. Incorporators—C. L. Gilbert, W. A. Lafont, E. J. Heimenz.

Elwood Coal, Oil & Gas Co., Pittsburg, Pa.; capital \$300,000. Incorporators—J. R. Snyder, Frank Cleveland, Chas. J. Boak.

Moorefield Coal Co., West Virginia; capital \$50,000. Directors—David Junk, C. L. McKee, P. L. McAdain and J. S. Weddell.

Hoit-Cass Coal & Supply Co., Greece, N. Y.; capital \$25,000. Incorporators—H. G. Holt, W. H. S. Cass, A. M. Cass, A. C. Holt.

Pittsburg-Rockerville Mining Co., Philadelphia, Pa.; capital \$500,000. Incorporators—D. W. Prill, Ephraim Lyon, I. C. Ewing.

Baisley & Wattson Coal Co., West Chester, Bronx, N. Y.; capital \$5,000. Incorporators—G. P. Baisley, T. B. Wattson and Jno. Davis.

El Paso County Land & Fuel Co., Colorado Springs, Colo.; capital \$150,000. Incorporators—O. B. Wilcox, A. H. Wood and R. R. Mitchell.

Bridgewater Ice and Coal Company, Bridgewater, Mass.; capital \$25,000. Incorporators—L. W. Caryl, F. A. McNeeland, E. A. McMaster.

Southern Coal Co., Richmond, Va.; capital \$5,000. A. D. Landerkin, president and treasurer; C. L. Small, vice president; V. F. Landerkin, secretary.

Bellefontaine Feed & Fuel Co., Cincinnati, O.; capital \$10,000. Incorporators—J. W. Hufnagle, E. H. Tingley, H. P. Pendrey, L. A. Ansley, A. E. Miller.

W. H. Cochrane Coal & Coke Co., Connellsville, Pa.; capital \$500,000. President, W. H. Cochrane; vice-president, F. M. Brown; secretary, I. N. Kuhn.

Frisco-Central Coal Co., Birmingham, Ala.; capital \$50,000. A. M. Hobson, president; Walter Moore, vice-president; S. H. Tuck, secretary and treasurer.

Sweetwater Oil, Gas, Coal, Land, Zinc and Fuel Co., Sweetwater, Okla.; capital \$20,000. Incorporators—A. J. Coburn, F. Banks, J. W. Ginn, Robert Banks and others.

Hell Gate Coal Co., Missoula, Mont.; capital \$250,000. Directors—H. L. Shapard, Wm. W. West, J. J. Murphy, J. E. Kane, Jos. Flemming, Wm. Crawford, De Orr De Tarr and Walter W. Murphy.

TWO JUNE CONVENTIONS OF THE RETAILERS

The latest advices from Secretary R. E. Harris indicate that there is an unexpected demand for tickets to the coming meeting and excursion of the Michigan and Indiana Retail Coal Association, and it has been found necessary to stop reservations unless money accompanies the application. The week offers such large opportunities for enjoyment that the members are fast taking advantage of the splendid chance for a holiday outing in conjunction with the meeting. The meeting will be the fifteenth annual coming together, and now promises to be the best in the association's history.

The meetings will be held on board the magnificent steamship Manitou, June 15, 16, 17, 18 and 19, sailing from Michigan City, Ind., Tuesday, June 15, at 2 o'clock in the afternoon. The trip will be to Sault Ste. Marie and return, stops being made at convenient lake ports, including Mackinac Island.

The conventions held by this association have ever been recognized as important events in the coal world, in points of attendance and resultant benefits. The unique idea of holding the coming meeting on board a lake steamer met with popular favor immediately and was adopted by the executive board in response to the almost unanimous expression of approval on the part of the membership, which, in itself, removes all doubt as to the success of the venture. Many arguments in favor of the plan are possible and convincing—one being that an opportunity will be afforded for the demonstration of the theory that a closer and more thorough acquaintance between men engaged in friendly competition is conducive to the most perfect business results. There is no place where the forming of lasting friendships is so possible as on board ship.

Viewed from an association standpoint, the results of a convention are estimated on the basis of the amount of substantial benefits attained, and in order to derive the greatest good it is important that every business session receive the undivided attention of all delegates in attendance. It goes without saying that the business sessions of this convention will be well attended, consequently much work beneficial to the retail coal interests will result. It is so entirely different from a convention held in a city as to be ideal, combining as it does business and pleasure in just and equal proportions. It is equal to an ocean voyage, and without some of the inconveniences of the latter which travelers on the water occasionally experience.

The entire cost has been fixed at \$25, and the following itinerary has been arranged:

Out-Bound—Leave Michigan City 2 p. m., June 15; St. Joseph, 5 p. m.; Grand Haven, 10 p. m.; Ludington, 7 a. m., June 16; Manistee, 10 a. m.; Charlevoix, 5 p. m.; Harbor Springs, 11 p. m.; Mackinac Island, 4 a. m., June 17; arrive Sault Ste. Marie 10 a. m.

Home-Bound—Leave Sault Ste. Marie 2 p. m., June 17; Mackinac Island, 11 a. m., June 18; Manistee, 8 p. m.; Ludington, 11 p. m.; Grand Haven, 4 a. m., June 19; St. Joseph, 8:30 a. m.; arrive Michigan City 11:30 a. m.

Outside of the regular business sessions, a variety of amusement features will be provided, including music, dancing, vaudeville and picture entertainment; all of which, added to the continuous panorama of sea and shore, with occasional landings at places of which you have read but perhaps have never seen, will make this a most enjoyable event. The Order Kokoa will be in evidence, which is

enough said. Think of the possibilities of a koruskation on the water.

Ladies attending will find that every preparation has been made for their comfort and pleasure, and it is expected that all of the dealers who can will bring their wives and daughters with them.

Illinois and Wisconsin Association.

The meeting of the Illinois and Wisconsin Retail Coal Dealers' Association will be held on the last two days of June, partly in Chicago and partly on the elegant lake steamer Theodore Roosevelt. The program is not yet completed, but it is aimed to have some addresses that will give ideas for thought to the members of the association for a long time to come. The association will assemble at the Sherman House on the morning of the 29th of June and at 10:30 will be called to order by President Robinson. The preliminaries being over, the welcoming address will be delivered by Walter S. Bohle, and the response will be spoken by Delos Hull, of Oak Park. The president's annual address and the reports of the officers will be first submitted and disposed of. The afternoon session will also be held at the Sherman House. The evening can be devoted to the individual pleasures of the members, unless some arrangement be made for the joint entertainment, which is probable, though not yet determined.

The sessions of the second day will be held on the palatial lake steamer Theodore Roosevelt. Space has been arranged for in which to hold the meetings where they will not interfere with the other passengers. The steamer will leave the dock at 10 a. m. and arrive at Michigan City at 12:30. Here the first thing in order will be dinner, which will be either at the hotel or in the park, as circumstances may determine. On the way over a business session will be held. The stay in Michigan City will be three hours and forty-five minutes, the start on the return trip being set for 4:15, and the arrival back at Chicago for about 7 o'clock. The closing session, to be held on the boat on its way back, will be devoted to a discussion planned to take the place of the formerly popular question box. A list of twenty-two questions will be sent out to the members, which will be brought up at this meeting, and on which all will be asked to prepare themselves. One paper already arranged for is to be by Carl Scholz, president of the Rock Island Coal Company and the Coal Valley Mining Company. His topic will be "The Cost of Producing Coal at the Mines."

In addition to what is indicated above there will be some addresses by well-known people which will be of special interest, but which can not be announced in full at present. Acceptance in at least one case depends on considerations yet to be determined, and the secretary prefers not to announce any feature until it is certain to be furnished.

LICK BRANCH COLLIERIES AT WORK.

The Lick Branch Collieries Company resumed operations after being idle for several months. A permit for the resumption of work was recently granted by the West Virginia State authorities, experts having pronounced the mine safe. The mines a few months ago suffered two disastrous explosions, in which more than 100 miners were killed. The mines are located on the Norfolk and Western, at Switchback, W. Va. The use of black powder will be abandoned in the future and safety powder substituted.

COURSE OF WHOLESALE PRICES IN 19 YEARS

The annual report on wholesale prices, just published by the Bureau of Labor, Department of Commerce and Labor, in Bulletin No. 81, shows that wholesale prices in 1908 receded as a whole from the high level of 1907 and were only slightly in excess of the prices for 1906. The report gives wholesale prices for 258 representative staple articles for 1908 and completes a series of prices for the nineteen years, 1890 to 1908.

The average price for 1908 was 5.2 per cent below that for 1907—the year of highest prices during the nineteen-year period. It exceeded the average for every other year of the period, but was only 0.2 per cent higher than the average for 1906. As compared with 1897, the year of lowest prices during the period, the advance in 1908 was 36.9 per cent, and as compared with the average for the ten years, 1890 to 1899, the advance was 22.8 per cent.

The decline from the prices shown by the October, 1907, data continued without interruption until August, 1908, with the exception of a slight advance in July. Prices were at their lowest point of the year 1908 during the month of August, when they were 1.1 per cent below the average for that year and 7.3 per cent below the average for October, 1907, the highest point in the nineteen years covered. The prices in December, 1908, show an advance of 1.8 per cent over the prices in August.

Of the 258 articles for which wholesale prices were obtained, 162 showed a decrease in the average price for 1908 as compared with 1907. 33 showed no change, and 63 showed an increase.

Statistical Decrease in Farm Products.

Of the nine groups under which the commodities are classified, seven showed a decrease in price in 1908 as compared with 1907. In farm products, taken as a whole, there was a decrease in price of 2.9 per cent in 1908 below the average for 1907, this decrease being the least of any of the seven groups showing a decrease; food increased 2.4 per cent in price; cloths and clothing decreased 7.7 per cent; fuel and lighting decreased 3.1 per cent; metals and implements decreased 12.6 per cent—which was the heaviest decline of any of the groups; lumber and building materials decreased 9.4 per cent; drugs and chemicals increased 0.7 per cent; house furnishing goods decreased 3.8 per cent, and the miscellaneous group decreased 5.7 per cent.

The average wholesale price of raw commodities for 1908 was 5.9 per cent below that for 1907, and the average wholesale price of manufactured commodities for 1908 was 5 per cent below that for 1907.

Of the 258 articles included in the report, the prices of 107 were at the highest point during the year in January, while only 20 articles attained their highest price in December.

The following statement shows the movement of wholesale prices of raw and manufactured commodities and of all the commodities considered during the nineteen years from 1890 to 1908:

AVERAGE PRICE FOR 1890-1899—100.0.

—Relative Wholesale Price.—

Year.	Raw Commodities.	Manufactured Commodities.	All Commodities.
1890.....	115.0	112.3	112.9
1891.....	116.3	110.6	111.7
1892.....	107.9	105.6	106.1
1893.....	104.4	105.9	105.6

1894.....	93.2	96.8	96.1
1895.....	91.7	94.0	93.6
1896.....	84.0	91.9	90.4
1897.....	87.6	90.1	89.7
1898.....	94.0	93.3	93.4
1899.....	105.9	100.7	101.7
1900.....	111.9	110.2	110.5
1901.....	111.4	107.8	108.5
1902.....	122.4	110.6	112.0
1903.....	122.7	111.5	113.6
1904.....	119.7	111.3	113.0
1905.....	121.2	114.6	115.9
1906.....	126.5	121.6	122.5
1907.....	133.4	128.6	129.5
1908.....	125.5	122.2	122.8

In the following statement is shown, by months, the movement of wholesale prices for each group and for all commodities considered during the year 1908:

AVERAGE PRICE FOR 1890-1899—100.0.

Date— 1908.	Farm Products.	Food, Etc.	Cloths and Clothing.	Fuel and Lighting.	Metals and Imp'ts.
January	129.8	120.5	124.0	134.3	127.4
February	128.8	119.8	121.2	132.5	126.7
March	134.2	120.2	119.9	132.9	125.9
April	135.0	121.3	118.5	128.5	125.9
May	134.9	118.2	117.6	127.8	125.8
June	132.8	120.3	114.7	129.0	124.8
July	134.0	120.2	114.5	129.2	124.0
August	133.8	120.0	114.4	130.2	124.5
September ...	132.7	121.9	114.2	130.4	124.7
October	133.9	122.6	114.2	130.7	124.8
November ...	133.5	121.9	114.8	131.9	125.1
December ...	135.2	124.4	115.6	132.5	125.7

Average, '08 133.1 120.6 116.9 130.8 125.4

Date— 1908.	Lum- ber and build- ing ma- terials.	Drugs and chem- icals.	House fur- nishing goods.	Mis- cella- neous.	All com- modi- ties.
January	138.9	109.5	117.0	122.6	125.7
February	138.1	111.1	117.0	121.4	124.4
March	135.2	110.9	117.0	120.1	124.2
April	135.9	110.2	117.0	120.6	124.0
May	131.6	107.1	117.0	121.9	122.4
June	128.8	108.4	114.5	121.1	121.5
July	128.8	112.7	114.1	121.5	121.7
August	129.9	112.1	111.2	118.9	121.4
September ...	130.4	111.2	111.2	118.5	121.8
October	131.1	109.7	111.2	118.2	122.1
November ...	132.3	110.2	110.5	116.7	122.1
December	136.3	110.9	110.5	117.1	123.6

Average, '08 133.1 110.4 114.0 119.9 122.8

Besides a big cargo of bituminous coal the Italia Liner Lazio, which sailed from Philadelphia May 8th for Genoa and Naples, had over 150 passengers. She trades regularly between New York and Mediterranean ports and came over to take away the largest cargo of coal that has ever been shipped from the port.

THE DANGERS OF VARIOUS MINING METHODS

A paper read before the Elizabeth, Pa., Mining School, by JOSEPH BENNETT.

There has been a great deal of talk in the past year in regard to coal mining and mine explosions, and there have been different opinions as to some of the recent explosions. Some lay the blame on electricity in mines and some on gas, while others turn to black powder and coal dust. Coal dust, in my opinion, when suspended in the air current, with a very small percentage of marsh gas, will cause an explosion, if a windy or blown-out shot should occur while such was present.

The least percentage of marsh gas that will render air clouded with coal dust explosive will depend on the inflammable nature of the coal and the character of the gaseous mixture. The experiments of some of the mine experts have proved quite conclusively that a mixture of marsh gas and air containing one per cent of marsh gas, but containing also a highly inflammable coal dust, is explosive. This percentage of gas is such that it cannot be detected by the flame of an ordinary Davy lamp, or Clanny or other lamps burning sperm oil, unless there are some patent devices in such lamps for the purpose of testing for less than $2\frac{1}{2}$ per cent of gas. Yet there are other types of lamps burning naphtha or alcohol, and hydrogen, that will detect as low as $\frac{1}{4}$ of one per cent of explosive gas. Such lamps as these I believe should be used in examining mines and workings for gas, and I believe there should be such lamps at every mine for testing all return air ways. Such lamps as the Chesnean alcohol or the Clowes hydrogen will detect less than $\frac{1}{2}$ of one per cent, and should be used every day in the return of each split, and also in the full return of the mine.

Return Air-Ways Need More Attention.

There is not enough attention paid to return air ways such as old and abandoned workings, where all that is given off its gobs empties into the return; for such places are not examined every day, and in some old mines where there are a large per cent of old and abandoned workings, to examine them each day would require double the force of fire-bosses. This would be a very great expense to some companies, for where there are three or four it would require from six to eight. By the use of the improved lamps and examining the return every day a mine foreman could be sure as to the condition of the return air-ways in the percentage of gas being carried in the returns. I believe he could be more certain than by the use of other instruments used for such purpose in mining.

Now, since coal dust and black powder have become so dangerous in coal mining, it has caused a great deal of comment throughout the country as to which should be taken out of the mines—black powder or the machines that are producing so much dust as to make the mines dangerous? To my belief electric chain machines should be taken out of all mines generating explosive gas, for such machines are dangerous. In under-cutting the coal the chain machine grinds the finest of dust and produces more of it than any other machine that I have ever seen or had experience with in mining coal. The electric chain machine also heats the atmosphere of a mine while the machine is in operation. This brings the dust in such places as give off a small percentage of gas and makes them dangerous. I have seen places where open lights and the electric chain

machines were used, when the men running the machine would not put their open lights down near the under-cutting for they knew that would cause a small explosion. In the same mine compressed air machines were in use previous to the electrical, and while the compressed air machine was under-cutting the coal the open lights were constantly on the bottom—often set under the under-cutting 18 inches—and such a thing as an explosion was not known.

In my opinion compressed air is 90 per cent safer for mining coal than electricity. The exhaust from the compressed air machine has a cooling effect on the atmosphere of a mine and gives off more or less moisture. The moisture helps to still the dust and keep the atmosphere of the mine at a lower temperature. Now, since black powder has been proven to be such a menace to mining, it should not be used for blasting purposes in coal mines, but should be strictly prohibited; and so should electricity in mines generating explosive gas, for I believe that when one of these dangerous factors of coal mining has to be taken out the other should be taken with it. The laws governing the use of black powder and electricity in coal mines should be Federal laws, and such laws be put into effect without ifs and ands, for the world has seen within the last two years that black powder, electricity and the dust that is being produced by the electric chain machines have been dangerous.

I am not of the same opinion as an electrician of West Virginia who, a short time since, wrote his opinion concerning electricity in mines. He stated in his writing that he did not believe it right to hurt the mining industry for the sake of saving a few lives. He must remember that a miner's life is just as dear to him as that of any other class of workmen in the world today.

Does Not Believe in Electric Machines.

I do not believe the mining industry would be hurt by taking out electricity, for I believe the same production of coal can be taken from mines with other than electric machines and with less danger. The mine laws of the present time, if obeyed, would put electricity down and out in mining coal in the bituminous fields. It is a very quick method of mining, and coal can be produced far cheaper with the electric than with the compressed air machines, but electric machines will increase the danger of mining far more than any other method that I could mention. If electricity had to be taken out of the mines to-day we know it would cost the operators more to produce their coal; and so it would cost the miner more for blasting material if he has to cease the use of black powder.

Some will say that to take electricity out of the mines of to-day would be very costly to the companies, and some are of the same opinion in regard to the use of black powder, but in my opinion mining with electrical machines and blasting with black powder is a lottery. As they have both been proven dangerous in mining, I believe both should be prohibited. The cost of life should be the first consideration, as it by far exceeds the cost of mining.

Some miners will say, when preparing to charge a hole for a blast, "Give it plenty of powder, for it is easier to pick or shovel up the coal than to dig it down with a pick." Such men do not think of the surrounding conditions in the place where they are about to fire the shot. Others have no judgment in placing the holes used for blasting and are

very poor hands at regulating the use of powder. Good competent shot-firers for stemming and firing all shots should be given this work, and leave it to their judgment as to the amount of powder to be used for all blasts, and to see that all holes were properly bored. They should not fire a blast in any place unless the coal was properly mined and holes properly bored.

Shearing the coal on one side of the room or entry will decrease the use of blasting powder to nearly one-half the amount used at the present time. Some approve of shearing in the center of the room and some do not approve of shearing on either side or center. Some practice blasting coal that is from 5 to 7 feet in height, in two layers. This method would keep the mine atmosphere constantly clouded with smoke; it would produce a larger percentage of small coal; it would require more labor to get the coal ready for loading. In the seam of coal I am working at the present time, which is 5 feet 10 inches high, as a general run of seam, and has two slates or bands about 24 inches from the bottom of the coal which do not run at a regular thickness, it is generally blasted down with the first blast. When the coal is being shot in two layers the first shot is called a blocking shot. This shot will work all right, but the second layer of coal, if the undercut is equal in depth to the height of coal, will not work practically, as it will shoot down the back of the coal and leave the front to be broken down with the hand pick. This I have tried in practice many times, and have seen others try only to fail.

Shearing the coal in the center of the room, in my opinion, would increase the percentage of falls and cause more fatal accidents from slate and coal. The man shearing in the center would not have much chance to get away from coal or slate if it would fall at the time of shearing. I have seen coal in room workings fall that had not been sheared and throw the slate so far that had the miner been in the center of the room it would have been almost impossible for him to escape being caught. It would require two side shots if sheared in the center, and in some cases side shots are very heavy; and heavy blasting is one evil in mining that ought to be abolished as nearly as possible.

Favors Shearing on One Side of Room.

Shearing on one side of rooms, in my opinion, by far excels the other methods of blasting coal mentioned in this paper, and the blasting of coal that is practiced at the present time in the bituminous mines of Pennsylvania. It would decrease the use of powder nearly one-half. Under the present system of blasting a miner makes a cartridge for a shearing shot on a stick $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in diameter and 26 to 30 inches in length. The weight of this shell of 3-F black powder is 2 lbs., if 30 inches long; and for a butt shot the shell on the same diameter, from 12 to 18 inches long, will weigh from 15 ounces to one pound 2 ounces. So, by shearing the coal on one side of the room, the powder can be decreased to nearly one-half the amount used in the present method of blasting, and will produce more lump coal. The shooting of coal in the center of the place, when sheared on one side, can be done with a 10 or 12 inch shell, as it does not require as much to shoot the center of a place as it does to shoot on either side. Then by shearing on one side and firing the first shot in the center of the room it will often require but a small shot to clear the rib on the other side of the room. With the center shot, if the hole was not bored deeper than the under-cutting and was properly stemmed, it would be almost impossible to have a blown-out or windy shot, as the shot would have plenty of space to spread, and a person shearing on one side of the place has more chance to keep clear of falling coal and slate than he would have when shearing his coal in the center.

GOVERNMENT INVESTIGATION OF SMOKELESS COMBUSTION

The smoke nuisance in cities seems to be not only a burning question but a question of burning—of combustion. A bulletin just published by the United States Geological Survey (Bulletin 373) on "The smokeless combustion of coal in boiler plants," by D. T. Randall and H. W. Weeks, gives the results of smoke studies carried on in thirteen large cities and of tests made at the Government fuel-testing plants at St. Louis and Norfolk. A preliminary report on the same subject was made in the Survey's Bulletin 334, "The burning of coal without smoke in boiler plants," by Mr. Randall, the edition of which is now exhausted. The report just published consists of 186 pages and 40 illustrations.

The conclusions reached may be summarized as follows: Smoke prevention is possible. There are many types of furnaces and stokers that are operated smokelessly.

Any one kind of apparatus is effective only if so set under boilers that the principles of combustion are respected. The value of this requirement to the average purchaser lies in the fact that he is thus reasonably certain of good installation. A good stoker or furnace poorly set is of less value than a poor stoker or furnace well set. Good installation of furnace equipment is necessary for smoke prevention.

Stokers or furnaces must be set so that combustion will be complete before the gases strike the heating surface of the boiler. When partly burned gases at a temperature of, say 2,500° F., strike the tubes of a boiler at, say 350° F., combustion is necessarily hindered and may be entirely arrested. The length of time required for the gases to pass from the coal to the heating surface probably averages considerably less than one second, a fact which shows that the gases and air must be intimately mixed when large volumes of gas are distilled, as at times of hand firing, or the gas must be distilled uniformly, as in a mechanical stoker. By adding mixing structures to a mechanical stoker equipment both the amount of air required for combustion and the distance from the grates to the heating surface may be reduced for the same capacity developed. The necessary air supply can also be reduced by increasing the rate of combustion.

No one type of stoker is equally valuable for burning all kinds of coal. The plant which has an equipment properly designed to burn the cheapest coal available will evaporate water at the least cost.

Although hand-fired furnaces can be operated without objectionable smoke, the fireman is so variable a factor that the ultimate solution of the problem depends on the mechanical stoker—in other words, the personal element must be eliminated. There is no hand-fired furnace from which, under average conditions, as good results can be obtained as from many different patterns of mechanical stoker, and of two equipments the one which will require the less attention from the fireman gives the better results. The most economical hand-fired plants are those that approach most nearly to the continuous feed of the mechanical stoker.

The small plant is no longer dependent on hand-fired furnaces, as certain types of mechanical stokers can be installed under a guaranty of high economy, with reduction of labor for the fireman.

In short, smoke prevention is both possible and economical.

West Wyoming Coal Co., Wilkes-Barre, Pa.; capital \$5,000. Incorporators—Geo. J. Llewellyn, G. M. Lewis, J. P. Persch.

DEVELOPMENT OF A VIRGIN COAL FIELD

A paper read before the West Virginia Coal Mining Institute, Charleston, W. Va., December 1, 1908,
by F. H. PALMER.

Prior to the expenditure of much time or capital, there are three propositions which should be considered in undertaking development of a virgin coal field.

First, is the location of the tract to enable shipments to be made in an economical manner.

Second, the competition to be met with in available markets.

Third, the abundance or otherwise of labor near to the tract, or ability to attract it.

If all the above conditions are favorable the work of prospecting should begin.

Searching for coal in an unprospected region should first be done in a general way, and later in a more particular manner. The prospector should go over the ground, noting all prominent features, especially as to exposed rocks, etc. If he finds conditions favorable for coal, an approximate survey should be made by triangulation or some other equally rapid and simple method.

When it is fully established that coal exists on the tract, the second, or more exhaustive, search should be made.

If the coal is above water-level, the different seams in some cases can be traced by the terrace, or bench, at the drop, or by springs. Having found a bench or terrace which has the appearance of a coal terrace, search is made on the bench, or a short distance below, for the blossom of the coal.

Having located the different seams on the tract, and opened them at about regular intervals, and the seams show a fair regularity, the next step is to secure samples showing the true section of the different seams, and have an analysis made of each section. If, in taking the sections, any of them should show partings which would be thrown out in mining, it should not be included in the section. If the coal is to be used for the manufacture of coke, it is well to secure a large enough sample to make a practical test, as this is the only positive way that coal can be judged as to its coking properties.

If the coal seams are below water-level, the property should be tested by boring with a diamond drill, as this gives the true section of the different seams, and can be readily analyzed.

The next step is to find the true dip of the different seams. This is readily found by a series of levels and a few simple calculations. The direction of the true dip having been established, the next step is the location of the railroad to take the coal to market. Assuming that the coal seams are above water-level, in all cases the railroad should be located so that the different seams can be opened at the lowest point and the opening from the surface driven to the rise. This will reduce the cost of both haulage and drainage. If the seams are below water-level it is not necessary to take this into consideration, except in a general way, when locating the railroad.

Prior to the final location of the railroad, the probable location of the different operations on the tract should be decided. If any of the operations are to manufacture coke, it is highly necessary to secure a favorable location for the coke ovens; and in locating the different operations there may be natural conditions of which advantage may be taken to materially reduce the cost of construction of side-tracks, tipples, etc. All of these conditions having been taken into

consideration, the next step is the actual opening of the underground operation.

There are three methods in general use to open coal seams: Shafts, Slopes and Drifts. The method employed is governed entirely by the physical and geological conditions, and the location of the operation as to railroads, rivers, etc.

The conditions being favorable, and having decided to open a coal field by shaft, great care must be exercised as to location, as the important problems of haulage and drainage may be simplified by the location of same, and the commercial value of the operation as a whole may be determined.

The shaft should be located to suit both the underground and surface conditions. As all the coal mined must be brought to the foot of the hoisting shaft, it is expedient that the shaft be so located that all the haul is in favor of loaded mine cars, or as nearly so as possible. This can be attained by sinking a shaft at the bottom of the basin, or at the lowest point on the property to be operated, surface conditions allowing. This also simplifies pumping of the water, as all the water will flow to the foot of the shaft. The lowest available point in the coal seam on the property may be found by boring.

Shafts.—There are several forms in which shafts are sunk—circular, square, oblong or rectangular. The latter is generally used in this country. The size of the shaft is governed by the hoisting speed, depth and thickness of seam, all of which determines the size of the mine cars to be used to best advantage.

The location and size of the shaft having been determined, the next step is to consider the position of the sides of the shaft in relation to the dip of the seam. The long side of the shaft should be as nearly as possible parallel with the line of dip, as this will necessarily place the ends of the cage in line with the strike of the seam, and the charging of the cages can be easily accomplished. In locating a shaft it is also necessary to take into consideration the location of the hoisting engines, fans, etc., on the surface.

In sinking the shaft it is necessary to sink it three or four feet larger each way than the actual size that has been determined. This size should be continued to a depth sufficient to secure a solid foundation for the side-walls to rest upon. This depth having been reached, the space on the outside of the shaft proper should be concreted to secure the surface and, at the same time, furnish a permanent foundation for the headframe. The shaft is then sunk to the seam, and, if no serious difficulties are encountered, it will not be necessary to timber the shaft until it has reached the coal seam; otherwise the timbering is done as the sinking progresses. If any portion of the shaft is sunk through solid rock, it is only necessary to put in enough timbers to hold the guides in place.

In passing through the strata, if any great amount of water is encountered it may be provided for by what are commonly known as "Water-rings," from which, on the completion of the shaft, the water may be piped to the bottom. These are made by widening the shaft at a certain point and contracting at another point immediately below. This forms a trough around the shaft, and the water caught in the trough can be piped to the bottom of the shaft. Ex-

treme care should be exercised that the shaft is sunk plumb.

Having reached the coal seams, before turning off the first entries, the handling of the loaded and the empty mine cars and the matter of pumping and drainage must be definitely considered.

The coal seam having been opened, permanent pumps are placed, the permanent head-frame, tippie, and fan erected and hoisting engines installed. Providing the railroad and side-tracks are completed, the shaft is now ready to produce and ship coal.

Slopes.—The term slope in mining is applied to an incline entry or roadway driven through the overlying measures to the seam of coal; or, where the seam is pitching, it is driven in the coal towards the dip. Where the seam has a dip of 20 degrees or more, and the outcrop is on the property, a slope may be started from the surface in the seam of coal to be worked. When the seam is comparatively flat and near the surface, at the desired location of the opening, it may be opened by a slope being driven through the overlying measures.

When the slope is driven in the coal seam, the slope and air course are usually driven side by side; but where the slope is driven through the overlying measures a shaft is sunk nearby to serve as an airway.

In sinking a slope, the ground is excavated in an open cut, and the sides are either trimmed back to the natural slope or supported by crib work. When the face of the cutting has a greater vertical height than the length of timbers it has been decided upon to use, the sinking of the slope underground is begun. In sinking either a rock slope or a slope in the coal seam, it is usually necessary to timber as the sinking of the slope advances until solid ground has been reached. The distance between these timbers is governed entirely by the nature of the strata through which the slope is driven.

The dimensions of a slope depend upon the number and gauge of track to be laid and the size of mine cars to be used. In slopes where a large output is desired a double track is usually laid. These tracks may be laid the total length of the slope, or double track may be laid three-rail and a passing place at the middle of the slope.

If the slope has been sunk in the coal, it is usually desirable to drive to the limit of the property or to the bottom of the basin. At this point the permanent pumps are installed and the water pumped through a bore-hole to the surface.

Entries are driven off of the slope to right and left at regular intervals. The direction these entries are driven is determined by the strike of the seam; being driven to the right or left of the strike, as the case may be, to secure a natural drainage to the slope and, at the same time, secure a descending grade toward the slope to lighten the haulage.

Sinking the slope through the overlying strata, like the shaft, is very expensive, and no results are obtained from the operation of it for some time.

Drifts.—When the seam of coal is horizontal, or nearly so, and the seam a sufficient height above the railroad, it is opened by drift. In opening a drift about the same methods are employed as in opening a slope.

The location of a drift is determined partly by the outcrop; otherwise, it is fixed by the same conditions which determine the location of a shaft or a slope.

Drifting is advanced in the same manner as a slope, both in regard to timbering and excavating. The operation is much easier, because the drift is of such a grade that the water will run away from the face and not trouble the workmen, and the timbers are set vertical.

Several different methods of working out the coal are employed, and frequently two or more of these methods can be combined to advantage in the same operation. The

methods to be decided upon are governed entirely by the natural conditions.

THE MONTANA PRODUCTION WAS SLIGHTLY DECREASED

According to statistics prepared by E. W. Parker, of the United States Geological Survey, the total production of coal in Montana in 1908 was 1,919,390 short tons, having a spot value of \$3,766,860, a decrease of 97,467 short tons, or 4.83 per cent, below that of 1907, and a decrease in value of \$140,222, or 3.59 per cent. The production of Cascade County, the most important coal-producing county in the State, fell off 214,978 short tons, and the production of Gallatin County decreased 53,284 tons, but these decreases were partly offset by an increase of 122,002 short tons in Carbon County and of 43,758 tons in Fergus County.

The supply of labor during the year was more abundant than in either 1906 or 1907, the depression in the metal-mining industry having caused miners to seek employment in the coal regions. The number of men employed increased from 2,735 in 1907 to 3,145 in 1908, and the average working time decreased from 268 days in 1907 to 224 days in 1908. Most of the mines of the State were operated only eight hours a day, 2,902 men out of a total of 3,145 working eight hours.

The industry was not materially affected by strikes or other labor disturbances during the year. Strikes occurred at eight mines, the periods of idleness ranging from 6 to 34 days. The total number of men affected by these strikes was 556, and the average time lost by all of these was 17 days.

The average production per man in 1908 was 610 tons, against an average of 737 tons in 1907 and 764.4 tons in 1906. The average daily production per man declined from 3.15 tons in 1906 to 2.75 tons in 1907 and 2.72 tons in 1908. The decrease in the average production per man in both 1907 and 1908 was probably due to the smaller proportion of the machine-mined product. In 1906 the quantity of coal undercut by machines was 974,306 short tons, or 53 per cent of the total. In 1907 the machine-mined production was 984,368 short tons, but the proportion of the total was not quite 50 per cent. In 1908 the quantity of coal reported as mined by machines was 713,217 short tons, or 37.16 per cent of the total. In 1907 there were in use 86 mining machines; in 1908 only 57 machines were in use.

By means of washing machinery which had been installed at three establishments in the State 286,517 tons of coal were washed in 1908, the operations yielding 214,729 tons of cleaned coal and 71,788 tons of refuse.

According to Joseph B. McDermott, State mine inspector, there were 20 fatal and 58 nonfatal accidents in the coal mines of Montana during 1908. The most serious single accident was the result of a fire in mine No. 2 of the Northwestern Improvement Company at Red Lodge, on November 20. As a result of this fire 9 men lost their lives by suffocation, and 11 more were overcome with gases but afterward recovered. Of the other fatal accidents, 7 were due to falls of roof or coal, 1 to powder explosion, 2 men were crushed by cars, and 1 death was caused by the breaking of a hook on block and tackle.

It is announced that contracts have been let by the Navy Department for the transportation of from 40,000 to 48,000 tons of coal from the Atlantic seaboard to the Mare Island and Bremerton navy yards, and it is expected that much of it will be shipped from Baltimore.

OF READING, WHICH NOURISHETH THE WIT

There are favorable hours for reading a book, as for writing it, and to these the author has a claim. Yet many people think that when they buy a book they buy with it the right to abuse the author.—*Henry W. Longfellow.*

Reading is to the mind what exercise is to the body. As by the one health is preserved, strengthened and invigorated, by the other, virtue (which is the health of the mind) is kept alive, cherished and confirmed.—*Joseph Addison.*

Read not to contradict and confute, nor to believe and take for granted, nor to find talk and discourse, but to weigh and consider. Some books are to be tasted, others to be swallowed, and some few to be chewed and digested; that is, some books are to be read only in parts, others to be read, but not curiously, and some few to be read wholly and with diligence and attention.—*Lord Bacon.*

It is not the reading of many books which is necessary to make a man wise or good, but the well reading of a few, could he be sure to have the best. And it is not possible to read over many on the same subject in great deal of loss of precious time.—*Richard Baxter.*

Reading is a dissuasion from immorality. Reading stands in the place of company.—*Henry Ward Beecher.*

In science, read by preference the newest works; in literature, the oldest. The classic literature is always modern.—*Bulwer-Lytton.*

Learn to be good readers, which is perhaps a more difficult thing than you imagine. Learn to be discriminative in your reading; to read faithfully, and with your best attention, all kinds of things which you have a real interest in—a real, not an imaginary—and which you find to be really fit for what you are engaged in.—*Thomas Carlyle.*

By reading a man does, as it were, antedate his life, and makes himself contemporary with the ages past. And this way of running up beyond one's nativity is much better than Plato's pre-existence; because here a man knows something of the state, and is the wiser for it, which he is not in the other.—*Jeremy Collier.*

Books should to one of these four ends conduce—For wisdom, piety, delight, or use.—*Denham.*

Many books, wise men have said, are wearisome; who reads incessantly, and to his reading brings not a spirit and judgment equal or superior, uncertain or unsettled still remains—deep versed in books and shallow in himself.—*Milton.*

'Tis the good reader that makes the good book; a good head cannot read amiss, in every book he finds passages which seem confidences or asides hidden from all else and unmistakably meant for his ear.—*Emerson.*

Living more with books than with men, which is often becoming better acquainted with man himself, though not always with men, the man of letters is more tolerant of opinions than opinionists are among themselves.—*Isaac Disraeli.*

All rests with those who read. A work or thought is what each makes it to himself, and may be full of dark meanings, like the sea with shoals of life rushing.—*Bailey.*

There is a gentle, but perfectly irresistible, coercion in a habit of reading well directed, over the whole tenor of a man's character and conduct, which is not the less effectual because it works insensibly, and is really the last thing he dreams of. It civilizes the conduct of men, and suffers them not to remain barbarous.—*Sir John Herschel.*

The foundation [of knowledge] must be laid by reading. General principles must be had from books which, however, must be brought to the test of real life. In conversation you never get a system. What is said upon a subject is to be gathered from a hundred people. The parts which a man gets thus are at such a distance from each other that he never attains to a full view.—*Samuel Johnson.*

The man who is fond of books is usually a man of lofty thought and of elevated opinions.—*George Dawson.*

If thou wouldst profit by thy reading, read humbly, simply, honestly, and not desiring to win a character for learning.—*Thomas à Kempis.*

No matter what his rank or position may be the lover of books is the richest and the happiest of the children of men.—*John Alfred Langford.*

Reading furnishes the mind only with materials of knowledge; it is thinking makes what we read ours.—*John Locke.*

Have you ever rightly considered what the mere ability to read means? That it is the key which admits us to the whole world of thought and fancy and imagination? to the company of saint and sage, of the wisest and the wittiest at their wisest and wittiest moment? That it enables us to see with the keenest eyes, hear with the finest ears, and listen to the sweetest voices of all time? More than that, it annihilates time and space for us.—*James Russell Lowell.*

A fool reads a book and understands nothing in it. A witling reads it, he fancies he is perfectly master of it all without exception. A man of discernment sometimes does not comprehend it entirely, he distinguishes what is clear from what is obscure; whilst the *beaux esprits* will have those passages dark which are not, and affect not to understand what is really intelligible.—*La Bruyere.*

He that loves reading, has everything within his reach. He has but to desire, and he may possess himself of every species of wisdom to judge and power to reform.—*William Godwin.*

The art of reading is to skip judiciously. Whole libraries may be skipped in these days, when we have the results of them in our modern culture, without going over the ground again.—*Philip G. Hamerton.*

Given the books of a man, it is not difficult, I think, to detect therein the personality of the man, and the station in life to which he was born.—*Richard Henry Stoddard.*

LABOR CONDITIONS IN THE UNITED KINGDOM

An interesting report on labor conditions in the United Kingdom for 1908 is furnished by Consul Joseph G. Stephens of Plymouth, England. He says in part:

Trade disputes involving more industries and larger number of men have occurred in 1908 than in any year for a decade. The financial crisis in the United States in the late autumn of 1907 was followed by a widespread trade depression, which affected the United Kingdom and the continent of Europe. With the fall in values came lessened production, a smaller demand for labor, and a reduction of wages.

The principal labor disputes of the year have been caused by the resistance of men to the enforcement of wage reductions, but the stoppages, coming on a falling market and at the time when large stocks were on hand, ended disastrously for the men. From January 1 to November 30 there have occurred 367 trade disputes, in which 297,854 workmen were involved, with an aggregate loss of 10,506,600 working days. In the same period of 1907 there were 508 disputes, involving 137,142 work people and an aggregate loss of 1,978,100 working days. Consequently, the number of men affected has been doubled and the loss of working days has gone up by more than 500 per cent. The loss in wages alone is calculated to amount to \$15,000,000. The funds of the trades' federation and the trades' unions concerned have been depleted, and after the loss and suffering entailed by a stoppage, the reductions have had to be accepted.

The injury to trade and the loss and suffering involved by the labor disputes which have occurred during the year have caused the board of trade to form a court of arbitration for the consideration and, it is hoped, averting of labor disputes. The services of the most distinguished public men, captains of industry, and most sagacious labor leaders have been enlisted. These men will doubtless command public confidence and respect. There is much to be hoped from the development of arbitration courts and conciliation boards in removing causes of difference and averting labor disputes.

Ship Building and Cotton-Mill Strikes.

The most prolonged and serious dispute of the year has been in the shipbuilding and engineering trades of the north-east coast. For seven months this dispute was continued, causing dislocation of trade and serious loss in wages to the men. The men returned to work on September 24, accepting the reduction of wages with the understanding that no further alteration in wages take place for six months from the resumption of work. The loss in trade and wages by the dispute must have run up to several million pounds sterling.

The dispute in the cotton trade was of shorter duration, but it directly involved a much larger number of work people. The boom in cotton has been responsible for a good deal of mill building and increase of production, with the inevitable result of large stocks accumulated on a falling market. The Master Cotton Spinners' Association on July 24 decided to ask for a reduction of 5 per cent in wages. It was decided, after some negotiations, to postpone the reduction until the new year. To this the spinners agreed, but their decision was rendered valueless by the refusal to accept on the part of the card-room operatives. On September 21 the federated employers closed their mills, and about 120,000 operatives were rendered idle, besides the injurious effect exercised on other industries. The stop-

page continued until November 9, a period of seven weeks, when an agreement was signed for the operatives to resume work. The agreement provides for a 5 per cent reduction of wages, to come into effect on the first day in March. The only result which the operatives obtained for the seven weeks' stoppage and the loss of \$5,000,000 in wages was the delaying of the 5 per cent reduction in wages from the first day of January to the first day of March. The employers received very substantial compensation for the delay in the reduction of wages in the clearing of stocks and the placing of the trade on a better basis to meet any improvement in the demand.

Miners' Wages and Eight-Hour Day.

The miners have continued to receive high wages throughout the year, though there has been a drop from the boom prices of 1907. In the federated districts in England the coal owners gave notice of a reduction of 5 per cent in wages in July, which was resisted by the men, but on the application going before Lord James, on September 3, he gave his casting vote for the reduction asked for by the coal owners. The Scottish miners have suffered a reduction of 12½ per cent, and Northumberland and Durham have also had reductions. In the English federated districts wages are now 55 per cent above the standard wage and within 5 per cent of the maximum, in Durham 44½ per cent above the standard, and in Northumberland 41¼ per cent above the standard. In the closing days of the autumn session of Parliament the mines eight-hour bill was passed into law. The agitation on the part of the miners has been for an eight-hour day from bank to bank. The bill legalizes an eight-hour working day, or, counting the two windings, nearly nine hours from bank to bank. The new act, when it comes into law in Northumberland and Durham in January, 1910, and in other mining districts in July, 1909, will make a considerable change in the working conditions of the industry.

Toward the close of the year a small improvement in trade has set in, with a slight decrease in unemployment. In November the returns from trade unions with 644,770 members, showed that 9.1 per cent were unemployed, as compared with 9.5 per cent in October. It is hoped that these favorable indications of improvement will be confirmed with the new year.

Agreement in Ship-Building Trades.

Following are extracts from an article published in the London Times relative to an agreement between employers and laborers concerned in British shipbuilding:

A provisional agreement has been entered into between the Shipbuilding Employers' Federation and 26 trades unions for the prevention of strikes by the settlement of disputes in conferences in which all employers and all the trades unions shall be represented. This agreement is the most advanced step in the interests of industrial peace and economic industry in the history of labor. The federation and the unions recognize that it is in the interests of both sides that arrangements should be made whereby disputes may be fully discussed and settled without stoppages of work. No strike or lockout shall be declared until every means of conciliation shall have been exhausted in joint conferences.

When the joint conference, which embodies the authority of the Employers' Federation on one side and the whole of the 26 unions on the other, decides a question it is not likely that either side will disregard the verdict.

On the men's side the whole interest of the 26 unions will be opposed to a strike which would throw them all into idleness, while any employer who determines to reject the decision of this conference would find himself at war with the power of all the 26 unions in concert.

Neither side is to ask for a change in the scale of wages at shorter periods than six months. Even before a demand may be made for a change in wages there must be a conference on the subject between the employers and the unions.

The agreement is to continue in force for three years, and shall thereafter be subject to six months' notice on either side.

BANISH MACHINES FROM IOWA MINES.

Declaring their inability to operate the coal mining machines at the increased scale granted by the arbitration board at Des Moines, the Centerville Block Coal Company is taking out its machines and stowing them away, after twenty-four years' continuous use. They represent an investment of \$75,000 and have become practically dead property on their hands. The machines are of the air compressor type.

The Lee brothers have also stored their electrical machines at Mystic, and their big electric plant and machines are estimated to represent an investment of \$50,000. Owing to some controversy with the men, the machines there have not been used for some time, but they have not before been withheld from use because of the increased scale.

The arbitrators, Judge McHenry of Des Moines, W. D. Tisdale of Ottumwa, and L. F. Richards of Albion, granted an increase from 49¾ cents per ton for leaders in

the Centerville mines to 58½ cents. In the Lee mines the increase was from 55¾ cents to 61½ cents. The miners here were practically unanimous in being surprised at the increase, the most they were looking for being half the hand scale, which would have been 52½ cents. Many of the men who have been running machines and working with them all their lives have been in these mines twenty-four years and are at a loss in adjusting themselves to new conditions and do pick mining. About 150 are affected at Centerville.

A GREAT COAL CENTER.

One of the greatest coal centers in the world, with the exception of the coal fields themselves, will be in the new McCormick building now in course of construction at the northeast corner of Michigan boulevard and Van Buren street, Chicago. The City Fuel Company will take three floors and additional big coal companies have taken space as follows: The Peabody Coal Company, Globe Coal Company, Miami Coal Company, Eureka Coal Company, Springfield Coal Company, Wilmington Star Coal Company, Campbell Coal Company, Bickett Coal Company.

INVENTION TO SOLVE FUEL PROBLEM.

Colonel John Jacob Astor, according to an article in the *Scientific American*, has invented a "vibratory disintegrator," by means of which peat, found in vast quantities in the United States, and hitherto regarded as useless commercially may be turned into a gas that will illuminate and heat homes and drive machinery. Colonel Astor, the *Scientific American* announces, is now erecting a large gas producing plant on his country estate at Rhinecliff on the Hudson.

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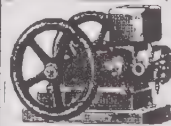
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EXTENSIVE TENNESSEE COAL FIELDS SOLD.

Two deeds have just been recorded at Sparta, Tenn., conveying 12,000 acres of valuable coal lands. These were deeds to the City Consolidated Coal Company by the Clifty Creek Coal & Coke Company, and the Caney Fork Gulf Coal Company, the consideration recited and on which tax was paid being \$120,000. This is the largest deal ever consummated in White County. The purchasers are Eastern capitalists with ample means, and it is said will develop this field at once. This will necessitate a five-mile extension of the Nashville, Chattanooga & St. Louis Railway to reach the heart of the 7,000-acre tract purchased of the Caney Fork Gulf Coal Company. The property of the Clifty Creek Coal & Coke Company has been operated for several years, and has proven highly satisfactory. The owners of these valuable tracts were almost all residents of Sparta. Dr. W. B. Young, manager of the Clifty Creek Coal & Coke Company, since its organization, will continue as manager of the new company, and will be one of the directors. A mortgage was also placed on record by the new company to secure a bond issue of \$500,000.

PITTSBURG COAL OPERATORS BLOCKED.

After the lake lines of railroad had agreed to a revision of the coal freights from competing territory included in Ohio, Pennsylvania, West Virginia and Maryland early this season, which meant a more equitable treatment of Pittsburgh coal operators as against those of districts farther removed from the terminal sought, court appeals and legal attacks on the plan have resulted in a tying up of the entire project, and the retention of the old rates.

The courts dismissed a petition for a permanent injunction against the revised rate list, but the litigation has in-

definitely continued the temporary injunction, which practically means a continuance of last year's freight rates for the remainder of the present lake season. The Pittsburgh Coal Operators' Association has taken the matter up again, determined to get some relief, and there is now talk of dropping all efforts to secure any decision from railroads and go direct to the Interstate Commerce Commission, which would have power to adjust this rate. Whether this can be done so as to be of any benefit this season or not, the operators yesterday could not predict.

WILL INSPECT IOWA COAL MINES.

The coal mines of Polk county will be inspected by more than 500 members of the Iowa and Nebraska Retail Coal Dealers' Association when the annual convention is held in Des Moines on June 15 and 16. At a meeting in the Savery Hotel a few days ago the coal dealers of Des Moines decided that their guests should be taken to the various mines in a special train. The Bloomfield, Saylorsville, Norwoodville and Enterprise mines are among those which will be visited. The officers of the Retail Coal Dealers' Association of Iowa and Nebraska are: President, George Gregory, of Marshalltown; secretary and treasurer, H. L. Laird, of Marshalltown; executive committee, M. A. Moore, of LeMars, H. T. Folsom of Lincoln, W. H. White of Platts-mouth, C. H. Chisam of Council Bluffs, and W. M. McFarlane of Waterloo.

Following a conference with the Waltham coal dealers, President Fitch of the Waltham Watch Company has announced that the company will sell hard coal to employees, but will limit the supply to 3,000 tons a year. The price will be made known soon.

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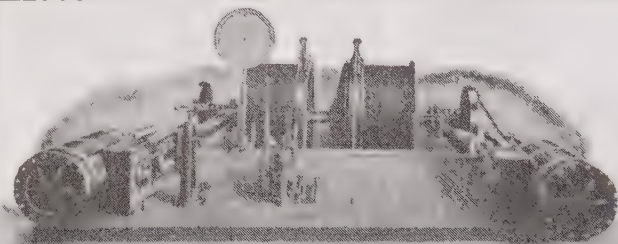
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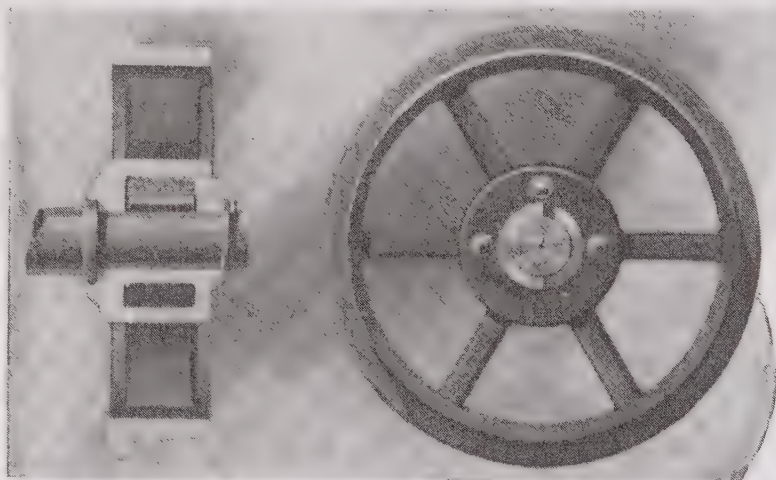
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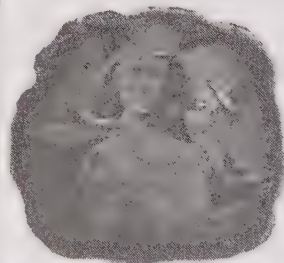
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What the devil can't do, woman accomplishes.

Always consult your wife, but do as you please.

Wherever women are honored, the gods are satisfied.

The tears of women are worth much, though they cost little.

A woman laughs when she can and weeps when she wills.

The best woman is the woman who is the least talked about.

Man is tow; woman is fire, and the devil blows the bellows.

Women and mules obey better when caressed than coerced.

We should choose a wife with our ears rather than with our eyes.

It is love that makes time pass, and it is time that makes love pass.

The spirit of a woman is of quicksilver and her heart is of wax.

The tongue of a woman is a dagger, and she never lets it grow rusty.

The fox is cunning, but the woman who loves knows far more than he.

The beauty of man is in his spirit; the spirit of woman is in her beauty.

Love your wife as you love your soul; but shake her as you would shake a plum tree.

A fortress that parleys with you and a woman who listens to you are both ready to surrender.

The coquette is like your shadow; chase her, and she flies from you. flee from her and she chases you.

When you go to war, say a prayer; when you go to sea, say two prayers; when you get married, pray all the time.

Do you want to test the fineness of gold? Use acid. The strength of an ox? Beat it. The nature of a man? Let him talk. The thoughts of a woman? There's no way.

To a question, "What is a woman?" the Turk answers, "a prisoner"; the Albanian, "a slave"; the Servian, "a servant"; the Bulgarian, "a companion"; the Greek, "a queen".

Think you, if Laura had been Petrarch's wife,
He would have written sonnets all his life.

—Byron.

The Benefits of Reading

He hath never fed of the dainties that are bred in a book; he hath not eat paper, as it were; he hath not drunk ink; his intellect is not replenished; he is only an animal, only sensible in the duller parts.—*Shakespeare*.

There is nothing like a good long illness for the cultivation of pure literature. It should not be too severe or needlessly painful, for then you may overshoot the mark and be too weary to read or be read to. It is possible to have too much of even the best things. But a proper, comfortable illness, that keeps you in bed, yet leaves you free to read; that banishes all the interruptions of life, the constitutional walks, the stupid visits, the annoying correspondence, the dressing and the undressing, and all the amenities of modern civilization, and allows you to lie at peace and read your fill,

is among the best gifts of the gods. You soon forget to be sleepy and lazy, your mind displays an unwonted activity, and you become conscious of an insatiable craving for books.—*Stanley Lane-Poole*.

With reference to this habit of reading, I make bold to tell you that it is your pass to the greatest, the purest, and the most perfect pleasure that God has prepared for his creatures.—*Trollope*.

Reading nourishes the wit; and when it is wearied with study, it refresheth it, yet not without study.—*Seneca*.

No man can read with profit that which he cannot learn to read with pleasure.—*Noah Porter*.

The Good Old Mother.

Mother's love is ever in its spring,
Mother's truth keeps constant youth.

—*From the French*.

There was a place in childhood that I remember well,
And there a voice of sweetest tone bright fairy tales
did tell.

—*Samuel Lover*.

The Mother's love—there's none so pure,
So constant and so kind;
No human passion doth endure
Like this within the mind!

—*Mrs. Hale*.

There is not a grand inspiring thought,
There is not a truth by wisdom taught,
There is not a feeling pure and high,
That may not be read in a Mother's eye.

There are teachings in earth, and sky, and air,
The heavens the glory of God declare;
But louder than voice, beneath, above,
He is heard to speak through a Mother's love.

—*Emily Taylor*.

A Couple of Conundrums.

What word is it, the first two letters of which are male, the first three female, the first four a brave man, and the whole word a brave woman?—*Heroine*.

There is a word of plural number,
A foe to peace, and tranquil slumber.
Now, any word you choose to take,
By adding s will plural make,
But, if you add an s to this,
Strange is the metamorphosis!
Plural will plural be no more,
And sweet, what bitter was before.
Answer—To cares add an s and it will make it caress.

The Superstitious Man.

"Alas! you know the cause too well;
The salt is spilt, to me it fell.
Then, to contribute to my loss,
My knife and fork were laid across;
On Friday, too! the day I dread!
Would I were safe at home in bed!
Last night (I vow to heaven 'tis true)
Bounce from the fire a coffin flew.
Next post some fatal news shall tell,
God send my Cornish friends be well!"

John Gay, *Fable* 37.

1802 OIL POINT 1909

CARBONITE
No. 3

A
SAFETY
EXPLOSIVE
for
producing
lump coal in
bituminous mines

EXPLOSIVES

COPYRIGHTED BY S. I. DU PONT DE NEMOURS POWDER COMPANY 1880

Mr. Machinery Man:

Do YOU want to reach the men who buy your products?

FUEL is the MOST EFFECTIVE ADVERTISING MEDIUM of all coal trade journals.

Why?

Because **FUEL** is owned and supervised by men actively engaged in the coal industry.

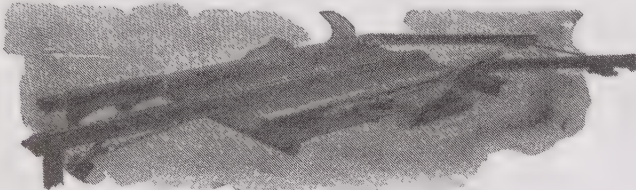
FUEL is read every week by all of the leading coal operators, their mine managers and superintendents from the Alleghenies to the Rocky Mountains—your regular and prospective customers.

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Coal Output of the World Could be Handled
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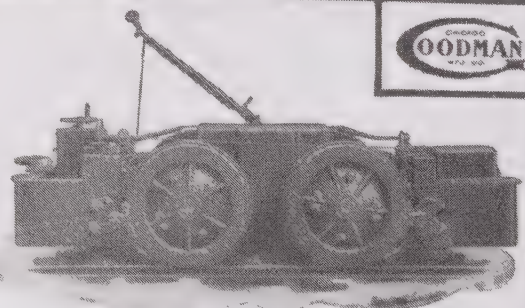
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Flexible Wheel Base—Good driving contact for all four wheels.
Mechanically Simple—Easy access to all working parts.
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Entirely Between the Wheels—No rider than the track.
An Exclusive Design—Patented in all essential features.

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Pittsburgh Knoxville Nashville Birmingham St. Louis
Charleston, W. Va. Denver Lindrooth, Shubart & Co.



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(5)

FUEL

A WEEKLY JOURNAL DEVOTED TO COAL, COKE & KINDRED INDUSTRIES

Vol. XIII. No. 8.

CHICAGO, ILL., JUNE 22, 1909.

Price \$3 Per Year.

WEST FRANKFORT MINE ABLAZE: FLOODED

Despite the Promising Indications Found by the Experts the Flames Broke Out Again When Air Was Admitted and the Mine is Being Flooded—Matters of Interest in the Illinois Coal Fields Last Week.

The report printed last week in FUEL that the fire was out in the West Frankfort, Ill., mine unfortunately proved to be a little premature. When the mine was fully opened at both shafts on the Saturday following the investigations by Messrs. Rice and Williams a slight smoke was discovered, showing that some fire was still smoldering beneath. The height of the water that had gathered in the entries precluded an entrance sufficiently to locate the flames exactly, and the existence of fire after so long a time convinced the owners that complete flooding was the only way in which they would completely conquer the fire. This was made an easy task because of the fact that the water was already high enough to almost completely flood all the working places. Pipes were secured and laid and the flow of the water started, with the view of flooding every portion of the mine and stopping the work of the destroying element. Just how long this mine will be out of commission it is not now possible to say, though it should take but a comparatively short time to extinguish the fire after the flooding has been completed. There are cases, however, where after a mine had been supposed to be entirely flooded and the fire drowned out fire still remained when the water was pumped out. This is an exceptional case, however, and it is believed that the West Frankfort mine will behave better.

The Illinois School of Mines.

The new school of mines provided for by the Illinois General Assembly at its recent session will be under the administration of the University of Illinois, of which it will be a part, and will have only a small beginning for the first two years on account of the limited revenues at the command of the state this year and the increased demands made on behalf of the older departments of the state university. The appropriation made amounts to only \$7,500 a year, but by providing for co-operation of the geology department and the state geological survey with the proposed new department it is believed that the course will be of great practical value from the outset.

The establishment of the school has been a matter of state pride with the operators of Illinois for a long time, and it was chiefly through their efforts that the allowance was made this session. There is no other school of mines in this immediate section of the country except the one just started at Madison and the Michigan school. The Michigan School of Mines is located at Houghton, far up on the northern peninsula, and being in the heart of the copy country and on the edge of the iron belt, the mining of ore is made a specialty. This does not offer much inducement to the Illinois student who intends to become an expert in coal mining in his own state. On the other hand, even Oklahoma, which produced 3,250,000 tons of soft coal last year, as against Illinois' 48,000,000 tons shown by the report

of the United States geological survey, is maintaining a mining school for the benefit of its young men.

These were the facts which induced the leaders in the Illinois Coal Operators' Association to ask for the passage of this measure. Of course it is understood that the school is to train particularly for work in the coal mines, and most particularly in the soft coal mines, and the operators may expect to profit largely from the specialized training within the next few years. The men which such a school would turn out would be the mine managers and mine inspectors of the next decade, and they would be better equipped and more intelligent on the average, it is predicted, than are the actual mine operators of the present day.

Coal Prices Will Be Higher.

While coal prices are far from attractive, the outlook is more promising than it has been for a year or longer. This is true in steam and domestic coal. Were business conditions near normal there would be a possibility of a coal shortage next winter in other than anthracite products. Prices are certain to be higher when the demand really sets in. The retail dealers have not taken care to supply themselves with the normal amount of coal for summer storage, and, consequently, have permitted their stock pile to become practically exhausted. Add to that fact the tie-up in lake navigation, and it can be seen that the supply of coal, in practically all centers, has been so reduced that there is no satisfactory surplus.

Those who normally begin to collect their stocks of coal with the 1st of April have put it off from week to week, and now make the statement that they do not propose to buy until July, August or September. This, of course, is going to concentrate into the last few months of the shipping season the movement of more coal than the mines can produce and the railroads transport.

A Good Man Comes to Chicago.

The most important of recent announcements in local coal circles is the association of E. E. Heiner with the Shoal Creek Coal Company, whose general offices are in the Fisher building, in the capacity of vice-president and general manager in charge of sales, and he is now in the active discharge of his new duties. Mr. Heiner is admirably equipped by experience and acquaintance to satisfactorily and well perform the functions he has assumed. He started in business as a railroad man. His first official position was in 1899, when he was appointed district passenger agent of the Kanawha and Michigan railroad with headquarters at Charleston, W. Va. In 1902 he went with the coal companies that subsequently were merged into the Sunday Creek Coal Company, and it was only a very few months until he had proved his ability and was given the title of

northwestern sales agent. He remained with the company until 1907, when a change in the organization brought him a promotion and the title of vice-president of the St. Paul and Western Coal Company. One of the crowning achievements of Mr. Heiner's selling career was the fact that despite the depression of 1908, the Sunday Creek Coal Company sold in his field nearly the same tonnage as it has sold heretofore. The Shoal Creek Company, in addition to the Panama mines, which produce 2,500 tons a day, is going into the general jobbing business, and then will broaden out to acquire and produce coal from lands in Indiana, Ohio and West Virginia. Both the Shoal Creek Coal Company and Mr. Heiner will profit by this association. The coal company secures an active, energetic and experienced man, who has already achieved a reputation for doing things.

William Green's Promotion.

William Green, for a long time mine manager of the Big Creek Coal Company's mine No. 2, located at St. David, Ill., has been promoted to the superintendency of all the company's mines in Fulton county—at Cuba, St. David and Dunfermline. Mr. Green formerly was with the O'Gara Coal Company, one of the largest in the state and also with the Saline County Coal Company, both in Southern Illinois. He has been a successful manager, having nearly doubled the capacity of the mines of the Big Creek Company in this country. He has been in charge of machine mines, and now that machines have been installed in this country, doubtless he will prove to be a good man for his company.

Work in the Danville District.

Concerning the persistent rumors that the Deering and Kelly mines at Westville, Ill., now under lease to the Brazil Block Coal Company, would shortly reopen, the only official statement is that made by Superintendent D. B. Meddill, who has charge of the Brazil Block properties in the Danville district. "You may say," said Superintendent Meddill, "that there is a very strong probability that our mines will soon open up again. But as to the exact time or any further details I can tell you nothing more at the present time." On every side, however, are evidences of a revival of activity at the mines, and it is expected that before long several thousand miners, who for some time have been working only about one day a week, will be back on regular duty again.

One evidence of renewed activity pointed out by Superintendent Meddill to a newspaper man was the work that is being done at the Deering machine shops here. On a side track back of the shops loaded on freight cars were twenty-five of the small cars used in transporting coal from the mines. "Those are the first of the kind we have ever turned out of the shops here," said Superintendent Meddill. "These cars are to be shipped to the company's two Witt mines."

Cheer the Promise of More Work.

Two hundred residents of Westville, a large percentage of them coal miners, cheered as a train of steel cars passed the depot there on its way to the Little Vermilion mine, near Georgetown. This mine is now the property of the Illinois Steel Co., and the large steel cars which passed through Westville and created such unbounded joy, will convey coal to the plant of the company in Chicago. Almost one year had elapsed since the steel cars had been taken off, owing to lack of business, both at the mines about Westville and the steel company's plant. There is now a revival of trade conditions throughout the country and therefore a better market for coal.

Since the Steel Co. has taken over the Little Vermilion coal mine, it is said that the work there is much better, between 600 and 700 miners being busy almost all the time. With similar conditions at the several other mines, thousands of people who have depended on work at getting out and shipping coal would again be kept busy. This is the condition people of Westville in particular, hope will be again brought about. During the last few months many miners and their families of that place and surrounding villages, have gone to other coal fields.

Acme Coal Company Will Continue Work

The Acme Coal Co. has reconsidered its decision to close its mine in Streator and, instead, will keep the property open for probably a year yet. There is a piece of good coal left on the north side of the shaft, and lying next to the workings of old No. 2 mine. Had this section of coal been taken out when the Acme mine was opened in 1892 there would have been more or less seepage through the coal of the water standing in the older coal property and it would have been necessary to have pumped out this water all these years. Before any of this piece of coal can be taken out it will be necessary to clean up the entries leading to it.

Robert J. Fairbairn, secretary and treasurer of the Acme Coal Co., said that the Acme Company, in the past ten years, has paid for labor in Streator \$2,000,000, with a considerable sum additional for supplies of various kinds.

St. Louis Coal Men on Outing.

Officers and stockholders of the Donk Bros. Coal & Coke Company, the St. Louis, Troy & Eastern and the St. Louis & Illinois Belt road were out on a tour of inspection some days ago. The party, comprising about fifty men, left East St. Louis at 10 o'clock in a special car over the Troy & Eastern and the mines at Cuba, Maryville and Troy were thoroughly inspected. The party arrived in Troy just before noon and after going over the Donk mine, paid a visit to the plant of the Troy Shoe Company and were greatly impressed with the activity going on there and the future possibilities of the business. Upon leaving here the party was taken over the new belt line both north and south as far as the construction has been completed and returned to St. Louis over the Troy & Eastern late in the afternoon.

Southern Illinois Gas Coal.

F. A. Wilkinson, of Marion, Ill., is one of the proprietors of the Spillertown Coal and Coke Co., a concern that has recently opened a new mine in Williamson county. The coal is said to be equal to the Pittsburg coal for gas making purposes. Mr. Wilkinson has furnished the gas works in Cairo, Ill., with 50 tons of the coal from this new mine and in a report furnished by the manager of the gas works it is stated that the coal yields 72 per cent of coke.

Cook County, Ill., Contracts Awarded.

The Cook county, Ill., board of commissioners has awarded contracts for coal for the county institutions and for the various districts of the county agent. Firms which got contracts for county institutions are the Miami Coal Company, Baker Brothers, R. B. Arnold and the City Fuel Company. The price per ton ranges from \$1.93 to \$7. The contracts for coal for the twenty-four districts of the county agent's department were awarded to Baker Brothers, the City Fuel Company, W. J. Freckleton, the New Kentucky Coal Company, D. J. Deasey, M. H. Rogers & Co., F. M. McCarthy and Bunge Brothers. The prices run from \$3.15 to \$5.14 a ton.

WASSON COAL COMPANY HAS A GOOD YEAR

The meeting of the officers and directors of the Wasson Coal Company held at the main office of the company in Vincennes on Saturday, June 5th, declared a dividend aggregating \$10,500, which is now being paid to the stockholders. A goodly number of Harrisburg people own stock in the mine as well as a few in other sections. The officers of the company are: J. T. Oliphant, president; J. L. Ebner, vice-president, both residing in Vincennes; and C. M. Wasson, secretary and general manager, who is in charge of the company's office and general affairs in this city.

The company was organized a little over two years ago, and the declaration of so substantial a dividend within that brief period is a healthy indication of prosperous business as well as a flattering commendation of the able manner in which the property has been handled. In speaking of the depression in the coal business C. M. Wasson, the secretary and general manager gave voice to one of the company's rules that should suggest something to a few other companies: "Coal is selling cheap," he said, "but when it gets so cheap that we can't sell it at some profit to ourselves we stop work. We will not sell our coal for less than it costs us."

The company's mine at Wasson is thoroughly modern in equipment, has a daily output of 1,800 tons, and employs an average of 350 men. The mine can be run at a daily production of 2,500 tons should the demands of customers so require. Forty tenant houses constructed by the company for use of its employes constitute a portion of the improvements made on the property, which aggregate \$40,000



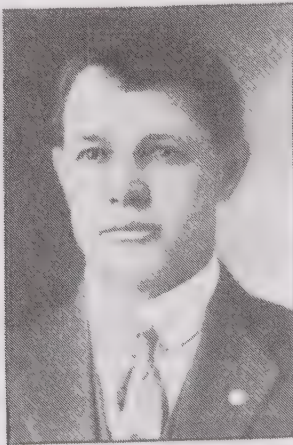
Wasson Coal Company's Plant.

The Harrisburg, Ill., Chronicle pays this deserved tribute:

"C. M. Wasson, the genial secretary and general manager, is entitled to much credit for the rapid success of the Wasson Coal Co. He stands numbered among our most substantial business men and is what may be truly termed a self-made man. He came to Harrisburg twenty years ago from Pope county and engaged in his first business venture, buying chickens, eggs, scrap iron and other junk. His office was one of the horse stalls of a livery stable. He had little or no education but he possessed the two principal rudiments so necessary for a successful business career—honesty and energy. He prospered; success succeeded success, and as a result of fair, square dealing, a keen foresight and grit sufficient to take a chance, he stands to-day at the head of an honored and successful corporation."

VACATION TRIP TO ALASKA.

George W. Perkins, of J. P. Morgan & Co., intends to make a vacation trip to Alaska this summer. The plans for the journey and the exact date of departure from New York city have not yet been finally arranged. The Alaskan tour is one which comparatively few New York financiers have made, among them E. H. Harriman, who in 1899 visited the far northwestern territory with a large party of guests, including a number of well known scientists. Although Mr. Perkins will visit Alaska for rest and recreation, it is probable that while there he will take the opportunity to inspect certain properties in which his firm is interested. These comprise the Bonanza mines, owned by the Alaska Copper and Coal Company, the control of which recently passed to the Alaska Syndicate, composed of J. P. Morgan & Co. and the Guggenheim interests, and the Copper River railroad, which is being built by the same interests.



C. M. Wasson, Secretary and General Manager.

in value. In addition to these improvements and the mine itself, the company owns over 1,000 acres of coal land.

The company has no bonded indebtedness, mortgages or other obligations of any kind. Prospects for a continuation of business are good, the company has a large list of customers on their books, and the quality of their output is such as to command ready sale in the market whenever the demand exists.

A six-foot vein of fine lignite coal was opened in a cross-cut being made at the Parfet clay banks, south of Golden, Col. The find promises to develop into one of the most productive coal mines of this section.

* FUEL *

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Official Paper of the Iowa Coal Operators' Association—H. L. Waterman, president, Ottumwa; David Dinning, vice-president, Cincinnati; E. C. Smith, treasurer, Des Moines; Joseph Sharp commissioner and secretary, Albia.

Official Paper of the Western Kentucky Coal Operators' Association—I. P. Barnard, president, Louisville; F. P. Wright, vice-president, Bevier; D. Stewart Miller, commissioner, Owensboro.

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Vol. XIII. Chicago, Ill., June 22, 1909. No. 8.

Humanity.

ARTHUR STRINGER.

**It's the bad that's in the best of us
Makes the saint so like the rest of us!
It's the good in the darkest-curst of us
Redeems and saves the worst of us!**

**It's the muddle of good and badness,
It's the tangle of tears and gladness,
It's the lunacy linked with sanity
That make and mark humanity.**

The time to advertise for business is when business has taken on a new lease of life, when prosperity is coming by a special train. Now is the time:

The man who whispers down a well
About the things he has to sell,
Will never get as many dollars
As the man who climbs a tree and hollers.

THE BEST ADVERTISING.

In an Indiana town of good size a coal company contracted with the local theater to place its advertisement on the curtain and agreed to pay \$25 for the advertisement thus secured. After paying for a portion of the time the advertisement was to be thus placed before the theater-going folks the coal company decided that it was not getting value received, as the curtain was not lowered often enough during each performance and refused to make further payment—as advertisers sometimes do with cause and sometimes without cause. The theater management sued for the balance of the contract amount, and, of course, recovered.

With the merits of this particular advertisement we have nothing to do, but it is safe to hazard the suggestion that the twenty-five dollars would have brought adequate results beyond question if it had been placed in the local paper. The newspaper is the logical vehicle for profitable advertising, and all other forms, whatever their special temporary merit, are merely subsidiary to the newspaper publicity thus gained. One of the clearly established facts is that the advertisement of any legitimate business must be placed steadily before the people whose business is solicited, or it will fail of its purpose. A small card inserted every day in the year, no matter how small it may be, will be in the end more satisfactory to the advertiser than any form of spasmodic advertising, even though it take the form of an entire page in some one issue of the newspaper.

"Keeping everlastingly at it" has been found the way to make advertising pay, and this is true of the coal business just as of every other business. Booklets, dodgers, handbills, and every other form of advertising may be forgotten, and even the name of the temporary user of an entire page may pass from the memory, for advertising must be steady to gain the attention of the buyer. The retail coal dealer who sells coal, or wishes to sell coal, need not hope to sell it through any advertising that does not hammer the truth home and keep the name of the seller stamped on the mind of the consumer. The jobber who wishes to supply the retail dealer cannot be satisfied with spasmodic efforts—for the latest advertiser will be the one remembered longest, and he will be remembered no more when he drops out and gives space to another man in the same line of business.

The manufacturer of machinery who really desires the trade of the men for whom he is making the machinery must advertise in the trade journal that goes to the man or the company whose business he desires. If a man, for instance, wishes to gain the eye of the Illinois coal operator, he can do it better through FUEL than in any other way. FUEL is read by somebody connected with every large coal company in the state of Illinois, practically, as well as in other states, and the man who reads the news of the coal industry is just as much interested in the advertisements of the men who supply him mine machinery and mine tools and mine supplies, as he is in the latest developments in the economical mining of the coal. Coal operators of Illinois own FUEL and they naturally read everything in it, advertisements and all—many of them the advertisements first of all.

A card standing all the year round in FUEL with a front

cover page every two or three months is the surest prescription we can give for securing a share of the reviving prosperity. We are always ready to give further information to the interested ones.

PROTECTION OF THE SURFACE.

The growing custom to rob the pillars in coal mines is increasing the menace to the surface, and West Pittston, Pa., people have had some recent experience that should call more attention to the need of some plan by which the surface may be protected. Vast investments in property undermined by coal companies are imperilled more and more, as the mines approach nearer and nearer to exhaustion. In the years to come the danger will be very great unless some way is found to overcome it. As the communities grow, which they are bound to do so long as the mining industry remains, land that is undermined must be used, because there is none other available.

The great problem to be decided in the near future is whether some effort shall be made to protect these vast investments in property or whether the investors shall continue to trust to luck, bearing the loss if it happens to come. The coal companies will have no interest in the anthracite communities when the coal has been taken out. Sympathy for those whose investments are imperilled will not induce the corporations to leave enough coal in the ground to support the surface. They will take away every pound of it they can get out, and, according to the decisions of the courts, there is no way to prevent them from doing so. The original owners of the land were offered more for the coal than they would have received for the land, and they sold and leased without considering the future needs of the growing communities. That was the beginning of the menace which is now looming up formidably.

The companies being within their rights, some remedy should be secured, either by new laws or by private agreement where previous contracts with the owners of the surface are in the way of new legislation. The flushing of mine refuse back into the old workings has proven a success in many American collieries which have tried it, but the cost has been urged against this method of surface protection and until the present time public opinion has not been sufficiently stirred to create in the minds of the mine owners an argument that would outweigh this cost. But sooner or later it will become inevitable, and the coal companies will find it to their advantage to protect the surface in populated communities.

Dr. J. A. Holmes of the United States Geological Survey refers to this flushing process when he says: "I do not see why you should have mine subsidences in the anthracite regions to anything like the extent that you have, if you followed here the procedure they have adopted with entire success in Germany. It pays; pays in many directions. It pays in that it insures the peace of mind of the community, so to speak; it pays in that it enhances the value of the property; it pays in that every pound of coal that is fit to burn can be mined."

Year by year the world is becoming more sensitive to the

cost in human life of the coal mining industry, and the coal operators are year by year, of their own accord and in line with the growing sensitiveness in this regard, are taking more precautions. It is but an easy step to the increased precautions for the preservation of the property of others, which comes next to the preservation of life itself—and in many cases both are involved in the subsidence of the surface over worked-out mines. The anticipation of a public sentiment is always better than tardy agreement with it after it is formed. It may be necessary—probably will be necessary—to place a higher price on the surface, or to pay less for the coal underneath when there is a guarantee of preserving the surface from subsidence, but if that be the best way—and it appears so to us—then let this be the method. The demands of the increasing population for land for homes would be greatly restricted by a continuance of the present method of leaving the surface to take care of itself.

The important meeting of the present week in Chicago will be the first annual gathering of the International Railway Fuel Association which began Monday and continues through Wednesday. A number of topics of especial interest to those looking after the fuel supplies of great railroads will be discussed, and a trip made to Gary, Ind., Tuesday, for a visit to the new steel plant. Among the topics chosen for discussion are the proper method of purchasing fuel with regard to operating and traffic conditions; the standard type of coaling stations, best method of accounting for railway fuel, the difference in mine and destination weights, the difficulties encountered in producing clean coal for locomotive uses and the value of briquetted coal as a railroad fuel.

TO BRIQUETTE DAKOTA LIGNITE.

T. E. Abbott, a Minnesotan, believes he has solved the coal problem of the northwest. For many years an expert in the briquetting of mineral ores, Mr. Abbott now claims to have discovered a plan for making lignite briquettes which is different from any yet used. He has gained the attention of the public affairs committee of the Minneapolis Commercial club, and announces that a plant is to be erected in Minneapolis to construct machines.

By the use of the Abbott invention it is claimed that perfect coal can be made out of Dakota lignite, to retail at \$5 a ton as a maximum, and which will be serviceable for steam, house heating and gas making. The machine is the culmination of 21 years' endeavor.

To date, briquettes have been made by pressure on moulds, and the drying of the coal by means of ovens, using a binder to hold the mass. The Abbott scheme is the simplest of them all. Instead of huge mold rollers, a battery of small tubes, compressed at one end are used, and plungers press in the charge, each pressure polishing the surfaces of the briquettes so that they are made independent automatically. They are turned out automatically as fast as the plungers at each end can be worked, and 18 tubes are used on one machine.

It is claimed that there is more lignite in the Dakotas than there is anthracite in the world. The inventor will not make briquettes or sell his machines, but they will be leased on a royalty for the coal produced.

MINE INSPECTORS' ASSOCIATION MET IN SCRANTON, PA.

The Mine Inspectors' Association of the United States held its second annual convention at Scranton, Pa., June 8, with Chief Mine Inspector George Harrison presiding. The members in attendance were:

Pennsylvania—P. J. Moore, L. M. Evans, H. O. Prytherch, D. T. Williams, H. D. Johnson, Hugh McDonald, T. H. Price, P. M. Boyle, D. T. Davis, Joseph J. Walsh, D. J. Roderick, P. C. Fenton, A. R. Lamb, J. A. O'Donnell, B. I. Evans, Martin McLaughlin, I. M. Davies, John Curran, M. J. Brennan, C. J. Price, W. H. Howarth, C. B. Ross, T. K. Adams, Elias Phillips, I. G. Roby, D. R. Blower, J. I. Pratt, J. Knapper, T. D. Williams, Alex. McCarch, Jr., Roger Hampson, J. F. Bell, F. W. Cunningham, Alex. Monteith, David Young, C. P. McGregor, Nicholas Evans, J. T. Beard, H. H. Stock, Clarence Hall, J. W. Paul.

Illinois—Thomas Hudson, Thomas Little, James Taylor, Thomas Moses, Hector McAllister, Walton Rutledge, John Dunlap, Richard Newsam.

Ohio—George Harrison, Edward Kennedy, J. L. McDonald, James Pritchard, W. H. Turner, W. H. Miller, Thomas Morrison.

Oklahoma—P. Hanraty, M. Clark, W. K. Patterson, F. Haley.

West Virginia—Joseph Laing, R. S. LaRue, P. A. Grady, J. A. Springer.

Indiana—James Epperson, Robert M. Irving, W. O'Connor.

Iowa—J. Verner, R. H. Rhys.

Maryland—J. H. Donohue.

President Harrison opened the convention with an address in which he outlined the purposes of the association, and explained that discussions on explosives, electricity in mines, and other matters of the kind would be the main order of business.

Committees were appointed as follows:

Executive Committee—H. D. Johnson, of Pennsylvania; Peter Hanraty, of Oklahoma; Albert A. Sams, of Indiana.

Committee on Constitution—John Verner, of Iowa; W. H. Turner, of Ohio; Thomas Moses, of Illinois.

Committee on Resolutions—Thomas K. Adams, of Pennsylvania; P. A. Grady, of West Virginia; Thomas Hudson, of Illinois.

Membership Committee—Clarence Hall, of the District of Columbia; J. T. Beard, of Pennsylvania; J. L. McDonald, of Ohio.

The remainder of the afternoon session was for the most part occupied in settling the details for the various sessions. At the evening session President Harrison, Judge H. M. Edwards, J. H. Taylor, of Illinois; J. H. Holmes, of the U. S. Geological Survey, and others spoke on mines and mining topics.

On the second day pleasure trips occupied most of the time; in the evening a banquet was the feature.

The third day was spent in the inspection of the Woodward and Truesdale collieries. The fourth day saw the completion of business, and in the afternoon the delegates left for Pittsburgh, where, on June 12, they inspected the Geological Survey Testing station at Arsenal Park and were banquetted in the evening.

RAILWAY MATERIAL WANTED IN CHILE.

During 1908 there were 648 miles of new railway constructed for the Chilean government at a total cost of \$10,254,284 United States gold, of which 166 miles were built under contract and the remainder by government

forces. Of this, 174 miles were added to the main line, or "longitudinal," as it is known here, since it follows the foothills lengthwise of the country, and the remainder covered branch lines leading to the coast or up into the Cordilleras.

The prospects for 1909 seem even brighter for railway construction in Chile than those of 1908. The indications are, therefore, that there will be a demand for quite an amount of railway material and supplies during the year. The Chilean government will continue to do a large amount of construction work. For this interested parties should address the Director-General de Industria y Obras Publicas, Santiago, Chile, while for business for the Arica to La Paz railway communications should be addressed to the Sociedad Sir John Jackson (Limited), Santiago, Chile. This contract calls for an outlay of very nearly \$15,000,000 United States gold, and covers about 350 miles of main track.

MAY ANTHRACITE SHIPMENTS.

The shipments of anthracite over the various lines for May, figures in tons, follow:

Roads—	May, 1909.	May, 1908.
Reading	840,799	1,261,555
Lehigh Valley	846,131	1,559,978
Jersey Central	631,042	874,128
Del., Lack. & West.....	762,501	938,837
Del. & Hud.....	631,373	505,395
Pennsylvania	495,673	569,745
Erie	664,736	629,638
Ont. & Western.....	191,615	248,837
Total	5,063,873	6,088,116
From Jan. 1 to May 31:		
Reading	5,395,756	5,173,553
Lehigh Valley	4,379,739	4,560,015
Jersey Central	3,365,138	3,609,195
Del., Lack. & West.....	3,942,293	4,115,335
Del. & Hud.....	2,870,585	2,784,804
Pennsylvania	2,566,269	2,573,655
Erie	3,359,109	2,967,190
Ont. & Western.....	1,148,983	1,179,780
Total	27,046,872	26,063,590

THE D. & H. COAL SELLING PLAN.

In compliance with the requirements of the commodities clause decision the Delaware and Hudson has given up selling coal, which will hereafter be marketed solely through a subsidiary, the Hudson Coal Company, whose entire capital stock is in the road's treasury. There are about a dozen coal companies owned directly or indirectly by the Delaware and Hudson. The Hudson Coal Co. has become the vendor of the entire present and future output of the Delaware & Hudson Co.'s coal, that the arrangement differs from the previous arrangement in that certain sizes of coal were transported by the Delaware & Hudson Co. to points away from the mines before the company had parted legal title to it, such coal being kept in storage and sold at the point of storage. Under the new arrangement the entire output of coal will be purchased by the Hudson Coal Co. at the breakers, thus conforming strictly to the commodities clause decision, while to continue the storage of coal at the above mentioned points, it is understood that the properties used for that purpose have been transferred to the Hudson Coal Co., which will hereafter operate them.

Cainsville, Ill., has found coal in a good big vein and is rejoicing.

WEST VIRGINIA TONNAGE FOR 1908

Following are the tonnage figures of West Virginia production by geographical districts and companies for the year ending with June 1908. These are the official figures compiled by Mr. John Laing, chief of the department of mines, for his annual report, which will shortly be ready for distribution. The figures are in gross tons of 2,240 pounds. The production for the year ending with June, 1907, was 40,040,311 tons.

Potomac district	1,785,305
Monongahela district	9,603,317
Wheeling district	1,037,682
Interior district	157,166
Kanawha-New River district	13,297,923
Norfolk & Western district	13,305,617
Total commercial mines	39,187,010
Small mines	180,000
Grand total	39,367,010

Production of companies exceeding 100,000 tons is given separately below:

Potomac District.

(Counties of Grant, Mineral and Tucker.)

Davis Coal & Coke Co.	1,327,292
Cumberland Coal Co.	119,096

Monongahela District.

(Counties of Barbour, Harrison, Marion, Monogalia, Preston, Randolph, Taylor and Upshur.)

Fairmont Coal Co.	3,794,977
Clarksburg Fuel Co.	561,729
Davis Colliery Co.	404,686
Elkins Coal & Coke Co.	353,456
Pittsburgh & Fairmont Fuel Co.	336,948
George's Creek Coal & Iron Co.	326,000
Virginia & Pittsburgh Coal & Coke Co.	282,667
The Century Coal Co. of West Virginia.	262,088
Davis Coal & Coke Co.	205,555
Maderia-Hill-Clark Coal Co.	189,475
Federal Coal & Coke Co.	180,588
New Central Coal Co.	174,746
Merchants Coal Co.	161,480
Cook Coal & Coke Co.	119,000
Rosemont Coal Co.	112,988
Hutchinson Fuel & Supply Co.	100,754

Wheeling District.

(Counties of Brooke, Hancock, Marshall and Ohio.)

Hitchmann Coal & Coke Co.	226,809
Lewis-Findley Coal Co.	126,062
LaBelle Iron Works.	119,004

Kanawha-New River District.

(Counties of Clay, Fayette, Kanawha, Lincoln, Mason, Nicholas, Putnam and Raleigh.)

New River Co.	1,771,751
Cabin Creek Consolidated Coal Co.	854,783
Sunday Creek Co.	749,525
Paint Creek Collieries Co.	628,680
Boomer Coal & Coke Co.	612,250
New River & Pocahontas Cons. Coal Co.	531,789
McKell Coal & Coke Co.	506,063
New River Collieries Co.	412,708
Raleigh Coal & Coke Co.	231,775
The Campbell's Creek Coal Co.	225,451
The Carver Brothers Co.	221,183
Kelleys Creek Colliery Co.	203,123
West Virginia Colliery Co.	201,604

Winifrede Coal Co.	179,860
The Marmet Coal Co.	171,920
Black Betsey Coal & Mining Co.	161,606
Carbon Coal Co.	158,515
Piney Coal & Coke Co.	158,089
Republic Coal Co.	155,963
Wyatt Coal Co.	149,484
Loup Creek Colliery Co.	142,455
The Low Moor Iron Co. of Virginia.	140,826
The Otto Marmet Coal & Mining Co.	137,850
Imperial Colliery Co.	134,206
Ephraim Creek Coal & Coke Co.	124,568
Plymouth Coal & Mining Co.	116,391
Kaeneys Creek Colliery Co.	116,378
Chesapeake Mining Co.	111,176
The Ganley Mountain Coal Co.	110,094
M. B. Coal & Coke Co.	107,780
The Star Coal & Coke Co.	105,034
Standard Splint & Gas Coal Co.	101,236

Norfolk & Western District.

(Counties of Logan, McDowell, Mercer, Mingo, Wayne and Wyoming.)

Pocahontas Consolidated Collieries Co.	1,400,313
United States Coal & Coke Co.	1,291,480
United States Coal & Oil Co.	666,059
Red Jacket Consol. Coal & Coke Co.	516,297
Thacker Coal & Coke Co.	391,856
Turkey Gap Coal & Coke Co.	356,248
Mill Creek Coal & Coke Co. (including Coal-American Coal Co.	293,326
Houston Coal & Coke Co.	282,415
Pulaski Iron Co.	278,273
The Empire Coal & Coke Co.	233,820
Crozer Coal & Coke Co.	231,766
McDowell Coal & Coke Co.	228,182
New River & Pocahontas Consolidated Coal Co.	220,760
Page Coal & Coke Co.	220,488
Ashland Coal & Coke Co.	213,703
Upland Coal & Coke Co.	189,307
Elkhorn Coal & Coke Co.	182,442
Powhatan Coal & Coke Co.	170,473
Algoma Coal & Coke Co.	169,221
Big Sandy Coal & Coke Co.	162,722
Greenbrier Coal & Coke Co.	150,490
Bottom Creek Coal & Coke Co.	150,245
Keystone Coal & Coke Co.	148,960
Virginia-Pocahontas Coal Co.	148,719
Gilliam Coal & Coke Co.	148,506
Lynchburg Coal & Coke Co.	147,500
Booth-Bowen Coal & Coke Co.	141,075
Buckeye Coal & Coke Co.	135,048
Louisville Coal & Coke Co.	132,487
Superior-Pocahontas Coal Co.	132,088
Eureka Coal & Coke Co.	131,400
Glen Alum Coal Co.	131,300
The Tidewater Coal & Coke Co.	130,722
Peerless Coal & Coke Co.	130,529
Indian Ridge Coal & Coke Co.	128,409
Elk Ridge Coal & Coke Co.	128,167
War Eagle Coal Co.	126,490
J. B. B. Collieries Co.	124,540
Shawnee Coal & Coke Co.	110,485
Thomas Coal Co.	106,849
Arlington Coal & Coke Co.	103,201

PERSONAL

Everybody in the coal business in the West knows Albert B. Lemmon, who travels for the Northwestern Fuel Company, and who is just as popular as he is well known. The other day, June 9th to be exact, he was in Cincinnati, and the first news heard of him was a telegram received by his sister, Mrs. McDonald, stating that he had that afternoon provided her with a sister-in-law, giving her first name. The name was well known to the sister as to all other members of the family, who hold her in the warmest esteem. The tidings were given by long-distance telephone to Capt. T. A. Lemmon, the groom's father, who was down at the mines, and he at once telegraphed the new-married ones: "All is forgiven. Parental blessings and a warm welcome await you at 1161 Washington boulevard. It was a shabby trick, however, to play on your 'Mammy.'" The wedding was solemnized in Cleves, Ohio, a suburb of Cincinnati, the bride being Miss Frances Jessup, a daughter of the captain of the company in which Capt. Lemmon had served during the greater part of the war of the sixties. She visited Chicago last summer and the friendship between the young people took the turn that culminated in the wedding at Cleves.

* * *

A pretty wedding that grew out of a romance in the west was solemnized at the residence of Mr. and Mrs. W. W. Taylor, 1354 Sheridan Road, when their daughter, Mrs. Louise M. Ridgely, was married to A. A. Morris, familiarly known in the coal trade of the far west as "Doc" Morris. W. W. Taylor is general superintendent of the coal mines of the Chicago, Milwaukee & St. Paul railroad, and has for the past two years been busy opening some new coal mines on the coal lands of the railroad in Montana. A year ago his daughter, Mrs. Louise M. Ridgely, accompanied him on a trip to Roundup, where he was opening a mine. His stay was somewhat protracted, and during the stay one of the gentlemen who met and admired Mrs. Ridgely was Mr. Morris. From an acquaintance he rapidly developed into an admirer, and as the feeling was reciprocated, the two passed the stage of mere friendship and when the visit was ended they parted with the knowledge that they would meet again. Mr. Morris is the engineer of the Roundup Coal Company, at Roundup, and in consequence more or less a business rival of the company represented by Mr. Taylor, but there was no rivalry between the young people that is known, and so in due course of time Mr. Morris came to Chicago to claim the fulfillment of the promise given in Montana. And so a pretty wedding was the result, and "Doc," as all his friends know him, returned to his far western home accompanied by the one woman he had waited for. Mr. and Mrs. Morris took with them to their far-away home the good wishes and unbounded love of all who had known them or either of them in their previous life. No mining engineer in that section stands higher than Mr. Morris, and the future looks bright to the newly wedded couple.

* * *

John M. McInhenny, until recently president of District No. 7, United Mine Workers of America, died suddenly at his home in Coaldale, Pa. Mr. McInhenny was one of the best known mine workers in the Hazleton district. He was prominent in the union since the big strikes and in later years was one of the chief advisers of the men in that part of the anthracite region. He succeeded W. H. Dettry as district president and remained in office until April 1, when

he was succeeded by John Waters, of Yorktown. During the recent negotiations with the operators Mr. McInhenny was a member of the miners' committee until his retirement as district president. Mr. McInhenny was only 31 years old.

* * *

Members of the Illinois Coal Operators' Association signified their appreciation of the services of their secretary-treasurer, E. T. Bent, and their high esteem for him as a man and a friend by presenting him a silver service following his recent marriage. No man has more or warmer friends than he has in the ranks of the association, and their token of this feeling was manifested in the beautiful gift. The presentation was made by H. N. Taylor, who voiced the tribute from the association to the man who has done so much from the earliest days of the organization to make it the success it has grown to be. Mr. Taylor jocularly remarked upon the pleasure that Mr. Bent now had a wife to look after him and to relieve the association from that duty. Another operator present offered the services of the association as arbitrators in any difference of opinion that might arise in the new Bent family. Mr. Bent has been so long an authority on all matters in the association work that he is a man whose place it would be well nigh impossible to supply. From the earliest days of the organization he has been always on the firing line, and the absence of friction at his own mines emphasizes the spirit of fairness which he has continually manifested. On the floor he has always been a leader in debate and in all negotiations with the mine workers he has had a conspicuous part. He accepted the gift in a few feeling words and thanked his friends in the association for the evidence of their cordial appreciation.

* * *

George W. Schleuderberg, who has since the organization of the company, been general superintendent of mines for the Pittsburgh Coal Co., has tendered his resignation and will retire from his position July 1. Mr. Schleuderberg will take a long rest and will then devote his entire time to his private business affairs. Mr. Schleuderberg was one of the organizers of the Pittsburgh Coal Co., a portion of the options on plants having been secured by him. When the company was formed he took service with it and has been officially connected with it until this time.

Max Goldsmith, who with E. E. Esselstyn, has been engaged in the retail coal business in Helena under the firm name of the Owl Creek Coal Company, has disposed of his one-half undivided interest in the firm to Jeremiah Collins, James Deering and E. K. Preuit. These, together with Mr. Esselstyn, will continue to conduct the business at the office occupied by the old firm, in the Collins land office building on Sixth avenue. Mr. Goldsmith will represent the Owl Creek Company in Spokane.

Joseph J. Thompson has accepted a position with the Jones & Adams Coal Company effective July 6th, and will have his headquarters at Marshalltown, Iowa. Mr. Thompson has had many years of experience in handling coal as a retail dealer in Marshalltown, and is already well known in the western trade. Now that he has given up the retail trade and gone on the road, he will unfailingly make new friends as well as strengthen himself with the old ones.

M. H. Kinney, of the firm of Kinney & Miller, has purchased Chas. E. Miller's interest in the People's Coal Co., at Goshen, Ind. Mr. Kinney has been very successful in business and his many friends will wish him continued prosperity.

F. J. LeMoyné, secretary of the Pittsburg Coal Company since its organization, has had the additional title of assistant to the president conferred upon him.

ORDER KOKOAL

THE IMPERIAL ELEVEN SENTRIES.

IMPERIAL MODOC—Thos. W. Ayers.....Philadelphia, Pa.
 IMPERIAL BARON—J. S. Van Epps.....Cleveland, O.
 IMPERIAL BARONET—J. C. Skidmore.....St. Louis, Mo.
 IMPERIAL BARONET—Chas. S. Bygate.....Pittsburgh, Pa.
 IMPERIAL PICTOR—Arthur M. Hull.....Chicago, Ill.
 IMPERIAL MAZUMER—Geo. H. Cooper.....Pittsfield, Mass.
 IMPERIAL GAZOOK—Bushrod M. Watts.....Baltimore, Md.
 IMPERIAL PITBOSS—Thomas Haskett.....Chicago, Ill.
 IMPERIAL ACOLYTE—John Keiley.....Jellico, Tenn.
 IMPERIAL SWATTA—Chas. B. Kinne.....Buffalo, N. Y.
 IMPERIAL SPOTTA—Wm. McComb.....Toronto, Ont.

As the time of the fourth annual powwow of the Order Kokoal approaches the evidence accumulates that it will be the high-water mark in attendance and interest. St. Louis has a wide-awake committee at work, and every preparation is being made for a record-breaking time and attendance in the Mound City on the 9th, 10th and 11th of July. The program has been already printed in FUEL, and to this the committee will add everything that can provide new pleasures for the Kokoals in attendance on that occasion. A postal card request sent out for definite information as to those who will be on hand is being answered most favorably and generally, and everything now points to a great and successful gathering.

The fact that the Order Kokoal is by far the largest organization in the coal trade, with some 3,500 members; that it embraces in its membership the leading representatives in all branches of the industry; that its fundamental principles are for the uplifting and betterment of general trade conditions, affords an exceptional opportunity for operator, wholesaler, retailer and salesman to get together on common ground and discuss in a heart to heart manner the best ways to promote and advance the interests of the world's greatest industry.

The program is of national significance. Thomas L. Lewis, the president of the United Mine Workers, has accepted an invitation to make the principal address, and will tell of the community interest which should exist between operator, distributor, consumer and miner of coal. Mr. Lewis is an eloquent speaker, and it will be well worth while for everyone in the coal business to go to St. Louis to hear Mr. Lewis and meet him personally. It will enable them to know the man who is the leader of the miners, to better understand his line of reasoning and as a result put them in a better position to forecast results of any future labor discussions which cannot fail to prove of value to them in their business.

Another speaker of national prominence will be United States Senator Lorimer of Illinois, father of the deep waterway project, who will give his intensely interesting illustrated lecture in regard to the proposed deep waterway from the lakes to the gulf, and explain its significance and great value to the entire coal trade.

By no means the least interesting or valuable feature of the program will be the thorough consideration of the British thermal unit system. This is a question which is rapidly becoming a most prominent one in the coal trade and is one about which every coalman cannot be too well posted. It is proposed to look at it from all angles at the

powwow, so that the coal trade may be able to handle it in the most advantageous way. E. H. Taylor, a prominent engineer of Chicago, will explain its aims and purposes and point out objectionable features of many B. T. U. contracts as made at present.

E. T. Bent, secretary of the Illinois Coal Operators' Association, and other prominent operators, will tell of the disadvantages of the system from the coalman's standpoint, and it is believed that this round table discussion will result in much good.

Skout McFarland held a koruskation at Des Moines June 16th, which added the following good names to the Kokoal roster:

E. L. Lloyd, assistant treasurer Norwood-White Co., Des Moines.

J. D. Owen, superintendent Saylor Coal Co., Des Moines.

A. W. Carlson, Jr., salesman, Delaware Coal Co., Des Moines.

Walter A. Linton, with Roseland Fuel Co., Ottumwa, Ia.

W. K. Neill, retailer, New Sharon, Ia.

H. L. Guidinger, salesman, Eldredge Coal Co., Northwood, Ia.

John A. Cook, salesman, Enterprise Coal Mining Co., Des Moines.

J. F. Harmon, Ottumwa Fuel Co., Ottumwa, Ia.

Henry F. Garver, with Enterprise Coal Mining Co., Des Moines.

C. W. Eastman, retailer, Keosauqua, Ia.

J. G. Hollingsworth, with Bloomfield Coal Co., Des Moines.

Jacob G. Beck, manager Globe Coal Co., Des Moines.

C. H. Lloyd, salesman, Delaware Coal Co., Des Moines.

WELSH ANTHRACITE GETS IN FREE.

In sustaining a claim filed by Frank Waterhouse & Co., the board of general appraisers holds that Welsh anthracite coal containing between 90 and 92 per cent of fixed carbon is entitled to enter this country free of duty. The effect of the decision is to sustain a claim made by the importers and to deny the contention of the government for a tax of 67 cents a ton.

Judge Somerville, who writes the decision, says that the evidence shows unquestionably that the importation consists of Welsh anthracite coal. The return of the local appraiser shows the relation of fixed carbon to total combustible matter contained in the coal to be 91.47. Continuing, the decision says in part: "The evidence clearly shows that this importation consists of anthracite coal commercially known as such and substantially of the same character as that passed upon by the board in the case decided by the court in favor of the government. It is manifest, therefore, that the mere analysis of the coal will not always prove conclusive of its character."

In sustaining the protest, it is believed that the board paves the way for a review of the pending question by the higher federal courts.

POSSIBILITY OF BIG COKE COMPANY.

Henry C. Frick is said to have made overtures to the promoters of the independent coke combination to pool interests, and final decision is looked for within 10 days. As at present planned, the independent combination would be capitalized at about \$80,000,000, but should the Frick interest be included this capitalization probably would be increased to \$150,000,000. It is said that the desire of Mr. Frick to hold a controlling interest may impede negotiations. In this case a rate war might result.

SHIELDS ON MACHINES AND COPPER TAMPING TOOLS

Chief Inspector of Mines George Harrison has sent out the following notice to mine owners throughout Ohio:

Section 2 of the act passed May 9, 1908, became law August 9, 1908, and is as follows:

"In all mines where mining machines are used, each of said machines shall be equipped and provided with a sufficient shield as may be authorized by the state mine inspector, or his deputy, for the protection of those employed in or about the use of operation thereof; and said shield shall be kept in use constantly while said machine is under operation."

The maximum penalty for violation of the above section is \$100. Whoever operates a mining machine which does not thoroughly shield the operator and assistant operator from contact with the chain of said machine, and whoever in charge of a mine permits a mining machine which is not thoroughly shielded, to be operated, is liable to prosecution under the above section. For purposes of prosecution under the above section, this department will consider a person in charge of said mine as permitting a mining machine to be operated without being properly shielded, when said person in charge has knowledge that a mining machine is being operated without a proper shield.

This department, or the inspectors, is not responsible for the law, but all are thoroughly in accord with its provisions and are responsible to see that it is complied with. The department has had a great deal of trouble in having shields provided, and has met with a great deal of opposition from many machine runners, and some companies and managers have been very dilatory about complying with the law. Inspectors have given orders time and again to have shields provided, with little effect, and machine runners were being wound into machines and crushed to death, until inspectors were compelled to stop the operation of machines unless shielded. In many instances when a shield is broken off, instead of having it replaced promptly, it is allowed to operate until the mine inspector comes around and orders its operation to cease until the shield is replaced. This is not only unnecessary, but dangerous, and makes it extremely unpleasant for the inspector.

After the receipt of this notice, any mine inspector finding a machine operating in any mine without the chain being properly shielded, will at once swear out an affidavit and arrest whoever is in charge of the mine, and the operator of the mining machine.

The law requiring copper tamping tools was passed April 2, 1908. This department was not responsible for this law, but is also in accord with its provisions. While copper tamping bars were not on the market that complied with the law, we declined to enforce the law, and exercised our influence to have manufacturers recall the inferior tools and replace them with good ones. Tools are now on the market, samples having been sent to this office by the Warwood Tool Co., Wheeling, W. Va.; Beall Bros., Alton, Ill.; the Salem Tool Co., Salem, O.; the Martin Hartsoeg Co., Pittsburg, Pa., so there is no longer any excuse on that score.

The idea prevails among many individuals that shields on mining machines, as well as copper tools, are unnecessary, and that they are able to take care of themselves without their use, hence uniform action is necessary.

Every iron and steel needle must be taken out of the mines on or before the last day of June, and no needle of any material used other than copper, and all iron and steel tamping bars must also be removed from the mine, and no

tamping bar of any material other than solid copper, extending beyond the end of the bar, can be used, except a wooden tamper, and in tamping dynamite nothing but a wooden tamper must be used.

The operators and their agent (the mine boss or man in charge) will be held responsible, and action for violation will be taken at once by the inspector.

GEORGE HARRISON,
Chief Inspector of Mines.

WILL DOUBLE THE CAPACITY.

At the annual meeting of the stockholders of the Corona Coal and Iron Company the following directors were elected: Alexander Dempster, of Pittsburg; G. W. Theiss, of Pittsburg; J. B. Finley, of Pittsburg; L. B. Musgrove, of Jasper, and E. R. Lacy, of Jasper. The board elected A. Dempster president and L. B. Musgrove and J. R. Ryan vice-presidents.

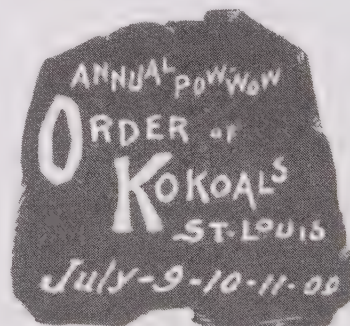
The Gayoso Company, which is the holding company for the Corona, held its annual meeting also and elected L. B. Musgrove, A. Dempster, H. P. Gibson, E. R. Lacy and Ed. Brown directors. Mr. Musgrove was re-elected president of this company.

Colonel Dempster, who becomes president of the Corona, succeeds Mr. Finley, who had held the position ever since the present company was organized. He inspected the mines on Thursday for the first time and approved large development plans submitted by the local officials.

The Corona Company has had an unusually prosperous season. While the coal trade as a whole has been dull, this concern has been operating to its full capacity ever since last July. It is mining at the rate of about 800,000 tons annually, but President Dempster stated that the improvements agreed upon would double the company's production.

LOW GRADE OIL IN MEXICO.

According to the report of an expert of the United States Geological Survey who was detailed to make an examination of the Mexican oil fields there is promise of the future production of large quantities of low grade crude oil, but not in greater supply than to meet the demand for fuel in Mexico, where there is practically no coal mined. The use of oil for fuel in Mexico, mainly by the railways, will affect the United States by reducing the demand for coal, by reducing the demand for high-grade crude oil for refining to supply the local market, and, to some extent, by competing in the European market with American refined products. The control of the Mexican oil fields as far as they have been exploited is already in the hands of strong English and American companies. As a consequence it is not a favorable location for small operators. Development is likely to be largely controlled by market demand rather than speculative activity.



SOUTHWESTERN OPERATORS ELECT THEIR OFFICIALS

At the annual meeting of the Southwestern Interstate Coal Operators' Association at Kansas City the following officers were elected for the coming year:

President—James Elliott, Haileyville, Okla.
Vice-President at Large—E. R. Sweeney, Kansas City, Mo.
Vice-President District 14—Jno. N. Hodges, Pittsburg, Kan.
Vice-President District 21—Wm. Busby, McAlester, Okla.
Vice-President District 25—R. G. Rombauer, Novinger, Mo.
Commissioner—W. D. Ryan, Kansas City, Mo.
Secretary—J. H. Hibben, Parsons, Kan.
Treasurer and Assistant Secretary—W. S. Newcomb, Kansas City, Mo.

The association then chose the following Executive and General Scale Committee:

District 14—Members: J. H. Shaw, Jos. Fletcher, J. H. Hibben, I. M. Fleming, Thos. Chappell. Alternates: W. H. Barrett, E. S. Nevius, Jas. Hamilton, J. R. Burnett, R. A. Gray.

District 21—Members: Carl Scholz, J. C. Reid, F. Bache, W. J. Jenkins, Jas. P. Hoye. Alternates: A. H. Reid, Wm. McKinley, J. A. Bolen, F. C. Mercur, M. L. Mardis.

District 25—Members: Jno. H. Bovard, Chas. S. Keith, Jno. Gibson, Ed. Carroll. Alternates: Arthur Vail, A. E. Harper, J. Hemmings, B. T. Wiley.

Local Scale Committee:

District 14—W. H. Barrett, J. W. Gardner, Jas. A. Brown, C. F. Spencer, Jas. Hamilton, Jos. Fletcher, J. R. Burnett.

District 21—J. C. Reid, A. H. Reid, Jno. Brown, H. C. Booth, Jas. Cameron, M. L. Mardis, Wm. McKinley, Jno. E. Daley.

District 25—J. Hemmings, Arthur Vail, B. T. Wiley, A. P. King, M. Rabbitt, G. W. Evans, Jno. Gibson.

KENTUCKY OPERATORS PROSPERING.

Kentucky coal operators will soon be enjoying big business again, notwithstanding the fact that this is the time of the year when the coal business is dull. The operators have made big contracts with the Illinois Central railroad, and it will require considerable time to fill them. In addition, heavy shipments of coal are to be made to Panama by Kentucky operators, and the outlook is bright for big business. The mines along the line of the Illinois Central railroad are now working less than half time, but the men will be given full time when work on the new contracts begin.

WHAT WILLIE KNEW ABOUT COALS.

"What," asked the teacher, "does anthracite mean?"

"That's a kind of coal," said little Willie.

"Yes. Anthracite coal is what we call hard coal. So anthracite must mean 'hard.' Now, can you tell me what 'bituminous' means?"

"That's coal, too," Willie replied.

"But it isn't the same kind of coal that anthracite is, is it? Bituminous coal is what we commonly refer to as soft coal. Now, Willie, let us see if you can form a sentence containing the words anthracite and bituminous."

Willie thought the matter over for a minute and then said:

"Here's one: 'This morning before pa started down town ma wanted five dollars for groceries and things, and she tried to get it by saying bituminous words, but pa gave her an anthracite look, and when he disappeared around the corner she was weeping bituminously.'"—*Northwestern Coal Dealer.*

THE OHIO MINING COMMISSION.

The Ohio Mining Commission met at Canton, O., recently for the purpose of formulating new mining laws suitable to operators and miners. The commission will make its report to Governor Harmon, who, it is expected, will in turn recommend that such legislation be enacted by the next General Assembly. The mining commission consists of George Harrison, State Mine Inspector; G. C. Weitzel, operator, of Columbus; C. L. Cassingham, operator, of Cleveland; James Hennessy, miner, of Barton; Percy Tetlow, miner, of Columbiana county, and H. H. McCauley, miner, of the Cambridge district.

GOING BACK TO COAL.

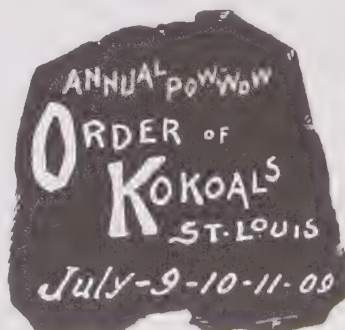
A dispatch from Ennis, Texas, says the machinists in the Houston and Texas Central railroad shops there are engaged in changing the oil burners on all freight engines back to coal burners. It is said this is being done on the entire Southern Pacific system. A number of oil burners have already been taken off and coal burners put on and the work still goes on. This will be cheering news to the coal operators of the Fort Smith and McAlester coal fields. It means the passing of a competition in the fuel field in the matter of oil burning that has proved a serious drawback to coal production in these two districts the past two years.

VIRGINIA COAL MINES BUSY.

Coal tonnage is increasing very rapidly, according to officials of the local roads hauling out of the Southwest Virginia field. "Coal is moving in larger quantities from the Southwest Virginia fields," said W. E. Allen, freight agent of the V. & S. W. "We expect June to be the best month we have had in a long time." This is considered an indication of an industrial revival in the south.

Jeremiah Campbell, general manager and treasurer of the Eastern Coal Company, of Providence, R. I., has disposed of his interests in the company to Samuel J. Greene, of that city. Mr. Campbell has severed all connection with the company and is now on his way to Europe, where he will spend several months in travel. The transaction is deemed to be of importance, as it again makes the Eastern Coal Company a strictly local concern.

A coal mining company has been organized at Balfour, N. D.



NATIONAL PRESIDENT LEWIS ISSUES A CIRCULAR

To the Officers and Members of the United Mine Workers of America: Brothers and Fellow Workers—You are probably aware that thousands of our members have had little or no work for many months. The mining industry has been very much demoralized the past two years and we have reason to congratulate ourselves that there were no wage contracts to negotiate this year in the central bituminous mining districts.

It is a matter of considerable satisfaction that during this period of industrial depression our agreements have been generally complied with by operators and mine workers. This in itself is one of the strongest possible arguments in support of the stability of wage contracts.

Of course, there has been some violation of our agreements which has been largely due to the failure of a proper understanding of the real purpose of the joint movement method of settling our differences.

In a few places there is not that activity and harmony in our ranks that is so necessary for the complete success of the United Mine Workers. There is no room for discord in our ranks. Indifference must be eliminated if we want to succeed.

We are on the eve of a general revival in all branches of industry, and mining will share in the general improvement. If each member of our union will devote a little time to the success of the organization it will mean better conditions of employment for each individual.

As a matter of information, I am pleased to report that the average paid-up membership of the United Mine Workers for the three months ending May 31, 1909, is the highest for any like period in the history of the organization. This does not seem as if the organization would go to destruction, as some of our members were led to believe.

Our wage agreements will expire next year. There will be a number of complicated questions to dispose of when we meet the operators. Let us be prepared to meet every issue in an intelligent manner when the time comes for action.

Study every detail of the principles of the United Mine Workers. Familiarize yourself with all phases of our wage contracts. Make every reasonable effort to settle local disputes that may exist and then refer them to the proper officers before causing a suspension of operation.

Let us practice the principles that we so strongly advocate. Let us win the respect and confidence of others by respecting ourselves and working for the protection and welfare of the mine workers of the country.

If every member will do his duty we will have four hundred thousand members at the end of this year. Let us all try. Yours truly and fraternally,

T. L. LEWIS,
President U. M. W. of A.

LABOR UNIONS AFTER THE FARMERS.

A canvass of the State of Tennessee by representatives of the American Federation of Labor and the international unions looking toward the development of a closer relationship with the farmers' organizations of the country will soon be made, if the plans now on foot at Nashville are carried out. The Trades and Labor Council of Nashville authorized Secretary Wolfe to correspond with the heads of the organizations with a view of securing such representatives and

inaugurating such a campaign. The object is twofold—educating the people at large as to the use of union-made goods and combining efforts in the matter of securing suitable legislation for the laboring classes.

Many of the county farmers' organizations throughout the State are now meeting regularly and the plan is to have these National and international representatives make appointments and speak to these meetings. The Council believes that not only can the people be educated to the use of goods bearing the union label, but also that the joint affiliation of the city laborer and the farmer will enable both to secure jointly fair and impartial legislation. With reference to the proposed new educational movement, it is expected that the representatives will lecture largely as to the kinds and styles of the various labels in use, thus encouraging their further use.

THOUSANDS TO GET MORE PAY.

Wages of the 7,000 men in the Pennsylvania Steel Company at Steelton, Pa., which were cut 10 per cent on April 1, are to be restored on July 1. The 2,000 employees of the Maryland Steel Company at Baltimore are also to profit by the same increase because of the improvement in trade.

Ground has been broken at Sparrow's Point, Md., for the new open hearth steel department of the Maryland company to cost \$1,000,000.

The National Tube Company's Riverside works have resumed operations in the steel plate and tube departments, employing 5,000 men.

The United States Steel Corporation is now operating 80 per cent of its blast furnace capacity, the highest level reached since the panic of October, 1907. Orders have been coming in at the rate of between 30,000 and 40,000 tons a day.

General Manager Charles S. Price, of the Cambria Steel Company, Johnstown, Pa., announces that: "The management of the Cambria works has been authorized to make a readjustment of wages to go into effect the first of July." No further statement could be obtained, but it is assumed by Cambria men that wages cut 10 per cent last April will be restored to the old figure. The readjustment will affect probably 12,000 men.

PENNSYLVANIA RETAIL COAL MERCHANTS.

The fifth annual convention and excursion of the Pennsylvania Retail Coal Merchants' Association will be held in Harrisburg, Pa., June 23 and 24. The visitors will arrive in Harrisburg on the 23rd and will register at the information bureau. The headquarters will be at the Commonwealth hotel. The morning session will be called to order at 10 a. m., by the president, Samuel B. Crowell, making the address. Mayor Ezra S. Meals will make the address of welcome for the city and President G. Frank Milleisen, of the Harrisburg Coal Exchange, will do the same for the dealers. The reports of the treasurer, C. Frank Williamson, and of the secretary, Wellington M. Bertolet, will be read, and the committee for the year appointed. In the afternoon the election of officers will take place, after which a stereopticon lecture will be delivered by a representative of the Philadelphia & Reading Coal and Iron Company, will be delivered. Wednesday evening the State Capitol building will be illuminated for the visitors' benefit.

Thursday morning a special train will be run over the Reading railroad to Gettysburg, the entire party being guests of the P. & R. Coal and Iron Company. The special will leave here at 7:15 a. m., arriving at Gettysburg, the party will be met by carriage and taken over the battlefield. Dinner will be served at the Eagle hotel. At 4 p. m. the special will leave Gettysburg to return to Harrisburg.

SETTING AND OPERATING A STEAM PUMP

A Paper Read Before the Elizabeth Mining School, Elizabeth, Pa., by WILLIAM JOLL.

It should be the first care in installing the pump to provide for a full and constant supply of liquid to be pumped. In order to accomplish this, observe the following rules: The suction pipe should under no circumstances be of smaller size than that in the casting. When necessary to employ long lines larger sizes should be used, as the frictional resistance, due to the unusual length, will partly counterbalance the head, due to vacuum, and prevent an inadequate supply to the pump. Use as few T's and L's as possible. All valves employed should be of the gate pattern. So that the free way for the water may equal that of the pipe.

In laying a suction line, a uniform grade should be maintained in order to avoid air pockets. The suction should have a drop of not less than six inches in each 100 feet towards the supply. Extreme care should be taken to make the suction line and connections absolutely tight. When suction exceeds 15 feet, or the suction line is over 100 feet long, a foot valve should be used as it keeps the pipe and pump chambers constantly filled with water, thus avoiding the necessity of priming the pump before starting. It should be remembered that a very small leak will supply the pump with that quantity of air that little or no water could be obtained. It is desirable, therefore, that the suction line be tested under water pressure of from 25 to 50 pounds per square inch, in order that any leaks may be detected.

* * *

A foot valve can be employed to advantage if its location is such that it can be drained in cold weather to prevent it freezing. The valve will insure quick starting of the pump, by maintaining the suction line free from air and full of water. A strainer is desirable and is absolutely essential if the supply is taken from a point that may permit the entrance of foreign matter that will have a tendency to clog the water passage and the valves of the pump. The area of the openings of the strainer should be four times larger than the area of the suction pipe and they should be frequently inspected.

Priming pipes are desirable when connected to the discharge above the pump, so that the water boxes can be filled with water and started quickly. This is desirable and a necessity for a fire pump. When hot water is to be pumped, the difficulty of lifting by suction increases with the rise in temperature. It should, therefore, be arranged to flow into the pump, if so hot as to vaporize when the pressure of the atmosphere is removed. Thick liquids should also flow to the pump by gravitation. The steam and exhaust pipes should be as direct and as free from L's as possible. Both pipes should be thoroughly cleaned before starting the pump, so that metal chips from cutting pipe may not be carried into the steam chest and score the valves and seats.

Proper allowance should be made for the expansion of the steam pipes in connecting same up. A drain pipe or bleeder should be provided for live steam pipes, connection to be made directly above the throttle valve and with the drain so that the water of condensation will not have to pass through the pump. Oil cocks and drains provided for the water and steam ends should be opened after the pump ceases operation, so that the water may be thoroughly drained, thereby avoiding any possibility of freezing. If it is desirable to connect the steam and water cylinder drips to the same pipe, a check valve must be placed, closing

towards the water cylinder, to keep it free from steam. All pipes leading to and from the pump should be properly supported, to avoid undue strain on flanges of the pump.

In starting a pump under heavy pressure it may fail to perform because of full pressure resting on discharge valves. You will discover that the air in pump cylinders is compressed and prevents water from entering. It is therefore advisable to start the pump without any pressure and run until all the air is expelled. This can be accomplished by suitable connection in pipes and waste pipe. In starting a new pump if it does not operate with a smooth and uniform motion, usually the first impression is that the steam valves are not set properly. These valves should be the last thing to be disturbed. Make sure that the suction and discharge water valves and everything connected with the water end is all right before investigating the steam end.

* * *

There is only one proper position for the steam valves on a duplex pump, and this position is given them at the factory and to make them different would be wrong. If, on starting a pump, it is found that one or perhaps both pistons do not make full strokes, the cause can usually be located in the stuffing boxes. They are probably packed too tight. In properly packed stuffing boxes it is only necessary to draw lightly on the glands to prevent leakage, thereby not only saving friction but having a much smoother working pump. When water plungers are packed with fibrous packing, the trouble sometimes arises from the swelling of packing, causing the pump to operate stiffly, and making uneven strokes. This is especially the case when pumping hot liquids, and sometimes it is necessary to take the packing out and thin it down. In providing a piston with new packing, it is well to soak the packing over night before putting it in.

In feeding a boiler or battery of boilers, the discharge pipe should be provided with a relief valve, so that if the pipe is throttled in any way, the pump may be relieved; otherwise excessive pressure will quickly accumulate. Such relief is absolutely necessary for power pump. The excess of water may be by-passed to suction or delivered to waste pipe. In feeding a boiler or battery of boilers with an ordinary duplex steam pump, which is the crudest and oldest type of slide valve engine, taking steam under full head throughout the entire stroke and exhausting under full pressure, the steam actually consumed to operate the steam boiler feed pump, even when the pump is new and in perfect order, is often as much as is required to operate the high grade engine that is developing the power; and if the pump is in poor order, as is usually the case, the pump takes more steam than the engine. This great steam consumption can be saved by using a power pump, belt driven from the line of shafting or where electricity is available by direct connection to a motor. On plants of any size the saving will pay for the cost of installation in a year.

* * *

All pumps should be placed as near the source of supply as possible. The vertical distance from the surface of supply to suction of the pump should not exceed 25 feet. The height of the column of water which will balance the pressure of the atmosphere is 34 feet; that is a column whose weight is about 15 pounds per square inch. In practice, however, the supply can never be drawn from a depth

greater than 25 feet. Water is raised by pressure of air on the water outside the pump. The piston of the pump exhausts the air and the unbalanced weight of water causes it to rise within the pump or pipes supplying the pump.

In setting a hot water pump, the pump should be lower than the source of supply, because the vapor from the hot water fills the vacuum as fast as it is made by the piston, and destroys its force, hence no pump, however good, will lift hot water. When hot water is elevated some distance there should be on the discharge end of pump an air chamber, as it prevents pounding and makes the action of the pump easy and uniform.

NEW ENTERPRISES

Eastern Light & Fuel Co., Camden, N. J.; capital \$200,000.

Brothers Valley Coal Co., McDonaldton, Pa.; capital \$5,000.

Bowersville Coal Co., Punxsutawney, Pa.; capital \$30,000.

Hignite Coal Mining Co., Cincinnati, O.; capital stock increased to \$130,000.

Brown Fuel & Lime Co., Marshalltown, Pa.; name changed to City Fuel Co.

E. N. Boggs Coal Co., Cleveland, O.; capital reduced from \$100,000 to \$10,000.

Roden Coal Co., Birmingham, Ala.; capital increased from \$300,000 to \$500,000.

Western Washed Coal Co., Chicago, Ill.; capital increased from \$25,000 to \$34,000.

West Wheeling Coal Co., Bellaire, O.; capital stock increased from \$10,000 to \$50,000.

National Carbo Fuel Co., Rochester, N. Y.; capital stock increased from \$25,000 to \$100,000.

Sequoyal Coal & Mining Co., Fort Smith, Ark.; capital stock increased from \$100,000 to \$300,000.

Pittsburg Coal Washer Co., Pittsburg, Pa.; capital \$12,000. Location in Illinois, Chicago; capital \$3,000.

Crescent Coal Co., Cuba, Ill.; capital increased from \$1,000 to \$100,000 and directors from three to five.

Bunsen Coal Co., Chicago, Ill.; capital \$10,000. Incorporators—H. I. Allen, J. R. Cochran, H. T. Martin.

Catawba Coal & Iron Co., Fincastle, Va.; capital \$2,500,000. Incorporators—Chas. E. Willis and others.

Brereton Coal Co., Brereton, Ill.; capital \$5,000. Incorporators—W. J. Spencer, C. P. Jacobson, J. R. Dailey.

Ferguson Coal Co., Boston, Mass.; capital \$95,000. President, W. F. Mackerman; treasurer, C. P. Connors.

Standard Lignite Co., Temple, Tex.; capital \$25,000. Incorporators—W. E. Hall, T. C. Hall, Geo. C. Pendleton.

Moshannon Coal Co., Baltimore, Md.; capital \$25,000. Incorporators—L. V. Waters, K. R. Lamotte, Chas. Scharf.

Mueller Bros. Fuel Co., Chicago, Ill.; capital \$10,000. Incorporators—N. G. Mueller, A. L. Mueller, T. J. Hickey.

Consumers' Coal Co., Little Rock, Ark.; capital \$10,000. Incorporators—W. M. Kavanaugh, E. C. Beach, J. F. Evans.

R. O. Campbell Coal Co., Atlanta, Ga.; capital \$200,000. Incorporators—R. O. Campbell, J. B. Campbell, John Eagan.

Cherokee & Cat's Fork Iron & Coal Co., Elliott Co., Ky.; capital \$500,000. Incorporators—Wm. L. Browning, Geo.

L. Whitecarver, J. A. Luttrell, Wm. A. Carr, Fred. Schoenherr.

Erie Consolidated Mines Co., Summit, N. Y.; capital \$300,000. Incorporators—A. W. Hicks, E. P. Hicks, R. P. Wilson.

Providence Ice & Coal Co., Providence, R. I.; capital \$15,000. Incorporators—W. J. Nisbet, J. E. Morgan, C. J. Miedrich.

Raven Run Oil Co., Charleston, W. Va.; capital \$60,000. Incorporators—Jno. Davidson, T. C. Hall, J. C. Halome and others.

Wilmington Carbon Coal Co., Chicago, Ill.; capital \$400,000. Incorporators—Geo. R. Cain, Vera B. Cain, Harvey H. Costello.

Theresa Coal Co., Theresa, N. Y.; capital \$5,000. Incorporators—J. C. Cooper, F. T. Santway, L. W. Tyler, Chas. H. Bulson.

East Side Coal & Builders' Supply Co., Columbus, O.; capital \$10,000. O. C. Ingalls, president; Andrew Wilson, secretary-treasurer.

Little Chute Lumber & Fuel Co., Little Chute, Wis.; capital \$12,000. Incorporators—Jos. Verstegen, H. J. Stark, Annie Verstegen.

Wellston Coal & Brick Co., Wellston, O.; capital \$75,000. Incorporators—J. H. Sellers, J. T. Ogler, O. H. Ogler, W. J. Ogler, A. K. Williams.

Avery Coal & Mining Co., East St. Louis, Ill.; capital decreased from \$15,000 to \$2,500, and location changed from East St. Louis to Freeburg, Ill.

Gaillard-Johnson Coal Co., Mobile, Ala.; capital \$50,000. Incorporators—John Gaillard, W. M. Johnson, J. F. Johnson, W. J. Spratley, Geo. Eberlein.

Malto Coal & Coke Co., Phillipi, W. Va.; capital \$100,000. Incorporators—H. D. Hileman, F. M. Kirk, G. S. Beckwith, J. M. Gee, E. M. Kufer.

Queen Coal & Coke Co., Charleston, W. Va.; capital \$30,000. Incorporators—C. R. McDermott, W. A. McCorkle, J. E. Chilton, J. A. Holley, W. E. Chilton.

Pennsylvania Anthracite Railroad Co., Little Rock, Ark.; capital \$25,000. Incorporators—J. K. Giohart, W. H. Giohart, L. G. Van Nastrand, Ferd. Stokes and others.

COAL MINING INSTITUTE OF AMERICA.

The program for the summer meeting of the Coal Mining Institute of America, to be held at Punxsutawney, Pa., June 29 and 30 and July 1, has been completed by the committee and embraces the following papers:

Address of Welcome, A. W. Calloway, general superintendent Rochester & Pittsburg Coal & Iron Co., chairman local reception committee.

The Safe Use of Electricity in Mining, George R. Wood, electrical engineer, Pittsburgh, Pa.

Clay Mining and Its Relation to Coal Mining in Central Pennsylvania, R. R. Hice, Beaver, Pa.

The Sociological Side of Coal Mining, C. Rae King, superintendent Donohoe Coke Co., Crabtree, Pa.

Mine Inspection with Respect to Car Allotment, H. B. Douglass, mining engineer New York Central & Hudson River R. R., Philipsburg, Pa.

The Preservation of Mine Timbers, John M. Nelson, Jr., U. S. Forest Service, Washington, D. C.

European Coal Mines, J. W. Paul, U. S. Testing station, Pittsburgh, Pa.

The Heat of Coke Ovens, J. R. Campbell, chemist, H. C. Frick Coke Co., Scottdale, Pa.

Methods of Bringing Down Coal Other Than by Blasting, William Seddon, Brownsville, Pa.

GATHERED FROM THE EXCHANGES

Because of a large increase in coal orders, the United States Coal & Coke Co. at Gary, W. Va., wants at once 200 more miners.

Fire which is believed to have been started by incendiaries, destroyed the entire plant of the Storr coal properties at Bozeman, Mont. The loss is estimated at \$100,000.

A standard-gauge railroad will be built from Paintville, Ky., to open up 30,000 acres of coal land near there, which are owned by the Consolidation Coal Co. This will necessitate the building of a railroad bridge over the Big Sandy River.

On the farm of Ira Golston, near Queen City, Mo., is a vein of coal 6½ feet thick divided by a small streak of blue stone. Mr. Golston says his coal bank is no fish story, nor a small drill hole in the ground, but that he has sunk a shaft 4x7 feet and had taken out and tested the coal from the top to the bottom of the vein.

A vein of what seems to be a good grade of fuel coal has been found on the Coker farm, one mile north of Sulphur, Okla. A core drill has been received by the drillers, and three or four test holes will be put down in the vicinity of the first find. The supposed vein of coal lies at a depth of 70 feet.

Mine No. 12 of the Cherokee and Pittsburg Coal and Mining Company, located north of Frontenac, Mo., the last mine opened by the company, is now considered one of the largest producers in the district, and it is stated that in a short time will be the largest producer. This is expected by Superintendent Fletcher, of the company, as soon as he gets the mine under full headway, which will be along in the fall.

The Golden Cycle Mining Company has practically closed a deal for the purchase of a controlling interest in the Danville and Pike's Peak coal mines north of Colorado Springs, Col. The deal represents an expenditure of about \$250,000. The coal properties will supply fuel for the electric power plant which the Golden Cycle Company proposes to erect at a cost of \$1,000,000, and which will enter into competition with the local light trust.

Anticipating a rapid improvement in the coke industry, the Monongahela Railroad Company will start immediately on extensive changes in its trackage to take care of increased business. Colonel J. M. Schoonmaker, president of the Monongahela railroad; J. B. Yohe, general manager of the Monongahela and Lake Erie railroad, and G. B. Obey, superintendent of the Monongahela railroad, made a trip over the company's line to determine the extent of the improvements.

The sale has been concluded of the old Owensboro Coal and Land Company property by T. A. Pedley, receiver, to the Fern Hills Coal Company, a new corporation. The new concern is capitalized at \$50,000 with the stock equally divided between Newman Birk, O. L. Tinder and W. Q. Adams. The sale transfers 87 surface acres, the mineral rights under 584 acres, the coal shaft on the 87 acres, and the tipples and stables in Owensboro, Ky., for the consideration of \$60,000.

Numbering among its stockholders more than a dozen of the retail coal dealers of Fort Wayne, the City Fuel Company is being organized with a capital stock of \$20,000, to embark in mining, wholesaling and retailing of coal. It is announced that the movement is in no sense a combination and that it will not affect the existing business of the various stockholders who are in the coal trade, but that the new

concern will conduct its own mining operations and place a new grade of coal upon the local market.

The Western Coal and Coke Company of Minnesota has appointed J. P. Edlund, of Lombard, as its state agent in Montana.

At the annual meetings of the stockholders of the Ohio Fuel Supply Co. and the Southern Ohio Gas Co., old directors were re-elected. The directors met immediately after and elected the old officers.

Testimony in the government suit against the coal railroads reveals that a long ton of 2,200 pounds is made up of 2,000 pounds of coal and 200 pounds of brakeman, the road employe being "weighed in" at this figure, no matter if his correct weight is only 125 pounds.

The Ohio River Coal Company, which was recently incorporated by Columbus men, has taken over 400 acres of coal lands adjoining the town of Pomeroy and will enlarge a mine now on the tract. The mine will be fitted with modern machinery and its output largely increased.

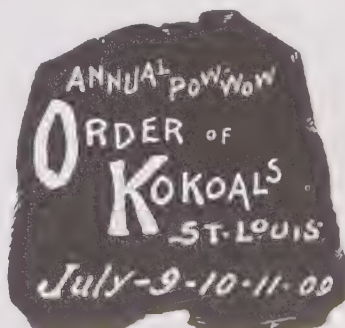
Seamans Bros., of Uniontown, Pa., have closed a deal for the purchase of 800 acres of coal land in Jackson township, Greene county, under option agreements made several months ago. The purchase price was about seventy-five thousand dollars. Adjacent acreage is under option.

A dispute regarding the rate of pay for outside work at the Black Diamond Coal Company's mines, west of Bellaire, Ohio, resulting in 315 men striking was settled after several days of idleness, and Ohio State President Green, of the United Mine Workers, ordered the men back to work.

Replying to an Oregon inquiry, Consul-General Charles Denby, of Shanghai, writes that excellent coke is made in China at two places, Hankow, China, and Tongshan, Chihli Province, North China, and that from both these places coke could be shipped in ocean-going ships to the United States.

The "Rider" vein, now being opened up at Oak Hill, No. 5, Clinton, Ind., is so clean of rock and sulphur that its excellence for domestic purposes will insure ready sale for all the mine will produce. While the roof is rather bad, the thickness of the vein and its superior quality make it very profitable to mine.

The report has been given out by the Monon Coal Company, who has purchased the Letsinger mine at Jasonville, Ind., that the mine would resume work as soon as a set of washers could be installed. This mine is one of the best in the field, and has been shut down for over two years. It will employ about 200 men.



CALCIUM CHLORIDE TREATMENT OF COAL DUST

By HENRY HALL, I. S. O., H. M. Inspector of Mines.

On February 22, 1908, a length of 285 feet of tunnel was treated with a solution of calcium chloride of 40 to 45, Twaddell. The floor of the tunnel was very dusty, the dust (chiefly stone dust) rising higher than the men's knees as they walked along. The solution was put on with a white-washing machine, using about eight gallons of solution to 30 lineal feet of road (road 9 feet wide). The surface of the dust was thus dampened, but under the crust there was little effect; and dust raised by traffic inbye continued to travel, carried by the wind, over the treated portion. Considering that the dust was not removed before the application, but lay some three inches thick, the result was fairly satisfactory, and for three months the road could be traveled in comfort.

Analyses of Dusts Collected From Roof, Sides, and Floor, and Mixed Together in Return and Intake.

No.	Places where Collected,	Car. & Hychns, Vol. Mat.		Ash
		p. c.	p. c.	p. c.
1—	From the prepared 285 feet. .	18.73	13.87	67.40
2—	Bottom of tunnel in return. .	29.70	19.20	51.10
3—	In the east return at the commencement of wide work. .	50.90	18.70	30.40
4—	In Bibby's Brow, 360 to 150 feet from the face.	58.39	6.11	35.50
5—	Shaft-bottom.	76.39	8.87	14.74
6—	Orrel Five-feet flat.	62.00	12.20	25.80
7—	Arley Flat, bottom of tunnel. .	70.44	12.26	17.30
8—	Bottom of main Arley Brow. .	69.38	8.62	22.00

* * *

On April 14, 1908, 225 feet in the main return tunnel was treated with 90 gallons of calcium chloride of 48 to 50, Twaddell, the dust having been previously cleaned off. This application kept the road clear of dry dust for three months, and, at the present time (August 22, 1908), the effect is still visible. The height of the road was measured immediately before the application, and again four months later, and there was no alteration.

The solution when applied to the side or roof had the same damaging effect as water.

On May 28, 1908, 330 pounds of calcium chloride (CaCl_2), previously ground to a fine powder, was sprinkled on the floor of the back brow for a distance of 240 feet, no dust having been removed (road 9 feet wide through goaf). It was reported as being wet and no dust rising on the following day. The writer saw this road on July 6, and the effect was still visible. Judging from this experiment, one application every three months would be ample. The depth from the surface of this underground road is 1,500 feet. The powdered calcium chloride was sown on dry by hand, 330 pounds being put on 2,241 square feet.

On July 14, 282 square feet was treated with 448 pounds of dry powdered calcium chloride. The dust was cleaned away from 60 feet of this road; the remaining 222 feet was not cleaned. This road was reported to be wet the next day, and the writer saw it on July 16. Questioning the under-manager as to its efficacy, he said, "he had just seen the horse come along with a full tub behind him, and there was no dust whatever; aforetime, sitting here, you could see clouds of dust coming in front of him."

Questioning the drawer, he said: "It were bad for dust before they put the stuff on; now there's no dust; it makes

it a lot pleasanter." The writer saw a tram brought out by the pony, and no dust was raised. Previous to the application, dust traveled some 60 feet ahead of the pony. The writer saw this part again on August 6, and found it to be still quite satisfactory, and apparently likely to continue so for some time longer.

* * *

Dry powdered calcium chloride is a rather expensive article; the writer believes the cost to be about 50s a ton, but there would be great saving in labor in its application to the roads, as compared with either plain water or any solution, and no capital outlay for pipes, barrels, hose, sprinklers, etc., is needed. Probably the cost per 100 yards by 9 feet wide would be something like 13s; but it must be remembered that plain water would have to be applied almost daily, whereas the calcium chloride would apparently be effective for three months.

This substance promises to solve satisfactorily the difficulty that there is in dealing with the dust in seams where watering cannot be resorted to. In consequence of the damage likely in dealing with the dust in seams where watering would do no harm, it is probable that this simple application of calcium chloride would prove less costly than the outlay and labor involved in successfully keeping the roads damp by means of water alone.

Practical men will appreciate at once the simple, rapid and inexpensive method of application of this dry calcium chloride, and the facility with which it can be applied in any distant or almost inaccessible part of the mine.

* * *

Calcium chloride is a greyish-white substance which has the power of strongly attracting moisture from the atmosphere and of holding the same. It contains nothing that can be injurious to the miners, roadways, and haulage-ropes, etc. It does not give off any odor or gas, nor can it possibly do so under any condition to be met with in coal mines. Comparing its hygroscopic property with salt, salt of itself has not the power of attracting moisture, but owes what little power it does possess to a small amount of impurity which it contains in the form of magnesium chloride, and cannot be compared with calcium chloride as a moisture-attracting substance. What little moisture it attracts is again yielded up at a few degrees' rise in temperature above the normal. Calcium chloride, on the other hand, will retain its moisture at temperatures considerably above 350 degrees, Fahrenheit, as this temperature is much exceeded in its manufacture. It holds moisture tenaciously at the above temperature.

As to the comparative actions of calcium chloride and water on iron, experiments carefully made showed that the action of calcium chloride liquor upon iron and steel is not one-third so vigorous as the rusting action of plain water; that iron exposed alternately to dampness and air rusts far more quickly than iron exposed to calcium chloride liquor and air alternately. This is confirmed by the fact that the bogie rails in the calcium chloride manufactory, where they are saturated with the article, are as good as new; but in places where water has dropped on them they are rusting badly, and show signs of great wear.

Mr. Hall replied to some observations on the subject substantially as follows: It had been pointed out that,

under certain conditions of aridity in mines, calcium chloride would be ineffective, but he believed that such conditions would be exceptional. In a mine between 2,400 and 2,700 feet deep, and where the temperature was 89 degrees, Fahrenheit, or thereabouts, the difference between the wet and dry bulbs was only ten degrees. It had always been averred that it was more difficult to work in mines at a high temperature when the air was moist than when the air was dry, and it would probably be of interest to try the use of calcium chloride in these deep mines.

Mr. Cadell had mentioned rock salt in competition with calcium chloride. He (Mr. Hall) was not a chemist; but had been told by a chemist that there was ten per cent of "virtue" in rock-salt as compared with ninety per cent in calcium chloride. The conditions varied much in different mines. So far as he had gone, the impression left on his mind was that dust accumulated in the main roadways at a much slower rate than has been generally supposed. He agreed with the observations of Mr. Rhodes as to the effect of occasional spraying with water; fifty or sixty yards in advance of the sprays the conditions were generally just as they were before the spraying was done.

ANOTHER GREAT STEEL MERGER.

The mysterious steel merger is emerging from obscurity and getting out into the open. A charter has been taken out in Delaware for the Imperial Steel Company, capital \$3,000,000, with power to increase it to \$750,000,000. In New York financial and industrial circles this is said to be the new steel merger, and it is stated by some of the best authorities that the only thing which prevented it from materializing long ago was the general attitude of hostility

assumed against trusts by the Roosevelt administration. Wall Street mentions the following prominent independent steel interests as being part of the proposed merger: The Republic Iron & Steel Company, capital \$55,000,000; the Bethlehem Steel Corporation, capital \$30,000,000; the Pennsylvania Steel Company, capital \$50,000,000; the Lackawanna Steel Company, capital \$60,000,000; the Jones & Laughlin Steel Company, capital \$30,000,000; the Midvale Steel Company, capital \$750,000; the Sloss-Sheffield Steel & Iron Company, capital \$20,000,000.

PLACING A TAX ON MAGAZINE ADS.

Australia has placed a heavy duty on all magazines containing advertising matter in a proportion of more than one-fifth of the general contents. Mutilated magazines are one of the first results of the new tariff. Subscribers to many popular monthlies are writing to the Melbourne papers, indignantly complaining of the condition in which the last numbers reached them. Nearly all the advertising pages were torn out by rude force. This was done by the agents with the permission of the minister of customs, who has granted the publishers four months' grace to make fresh arrangements. The Melbourne manager of one well-known magazine says that it has hitherto been sold in Australia at 12 cents, but if this provision in the new tariff is passed the price in future cannot be less than 30 cents.

The Farmers' Grain and Coal Company, of Saybrook, Ill., has bought the J. C. Tjarder elevator and employed A. Coon, of Reilly, as manager. The trade becomes effective just 1st. Mr. Coon has formerly managed an elevator in Saybrook, and is well known to the people.

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SCOTCH MINING SCHOOLS TEACH LIFE SAVING.

The owners of coal mines in Scotland, in establishing life-saving schools, are setting an example to those in other lands, and one that can be cordially commended to the attention of their brethren in America. For some years past the loss of life in coal-mine accidents in this country has been appalling, notwithstanding the efforts of legislatures, combined with the willing help of the owners, to lessen the risk. We have on our seaboard and on our lake coasts life-saving stations fitted out with all the most modern appliances for saving lives endangered by accidents to vessels, and well-trained crews of brave and hardy men are provided for these stations. The men are taught not only how to bring the endangered to the land, but what is necessary to be done to restore life which apparently may be extinct. It is on this line that the mine operators of Scotland propose to work, but they go a little further and are preparing to educate the miners themselves as to what to do and how to do it, when an explosion occurs, in order to save themselves and their fellows.

To accomplish this work of training it is proposed to erect a large drill hall, around three sides of which will run a gallery representing a mine. Through this gallery smoke and noxious gases, such as are produced in a mine by an explosion, will be automatically circulated. Apparatus is provided for overcoming the smoke and the gases, and the men are trained in its use. The apparatus is supplied with an ample stock of fresh caustic potash and oxygen for the purification of the air. The intention is that all persons em-

ployed in the mines shall go through a regular course of training in this artificial mine, so that each man will know how to manage the apparatus should an accident occur, and each is to be assigned to some specific duty in the rescuing efforts, just as firemen are assigned. By this training, and by keeping the mines well supplied with apparatus for the production of breathable air and the dispelling of smoke and poisonous gases, it is believed the loss of life by future explosions will be greatly reduced.

Every accident that has occurred in this country has developed a courage that may well be called sublime in those on the surface in efforts to reach and rescue those imprisoned in the mines, and that same courage would be manifested by the imprisoned if opportunity offered. Hundreds of lives might have been saved had American coal mines been provided with the proper apparatus and the men taught how to use it intelligently. It is to be hoped that the Scotch method will be productive of good results, and that similar schools will be established in every mining village of the world.

BATH HOUSES FOR SCOTTISH MINERS.

Vice-Consul Charles Drysdale, of Dunfermline, reports that the Fife Coal Company is going to provide bathing accommodations for its employees on leaving the pit after completion of their shift. A small charge, say 2 cents a week, will be made on the miners. Much doubt exists as to the acceptance of this accommodation by the miners, only 250 out of 1,500 miners having indicated their willingness to make use of the baths. This is the first movement made in the British Isles for such purpose, although the miners on the Continent, especially in Germany, have for many years made general use of the bathing accommodations provided for them.

O. L. GARRISON, President

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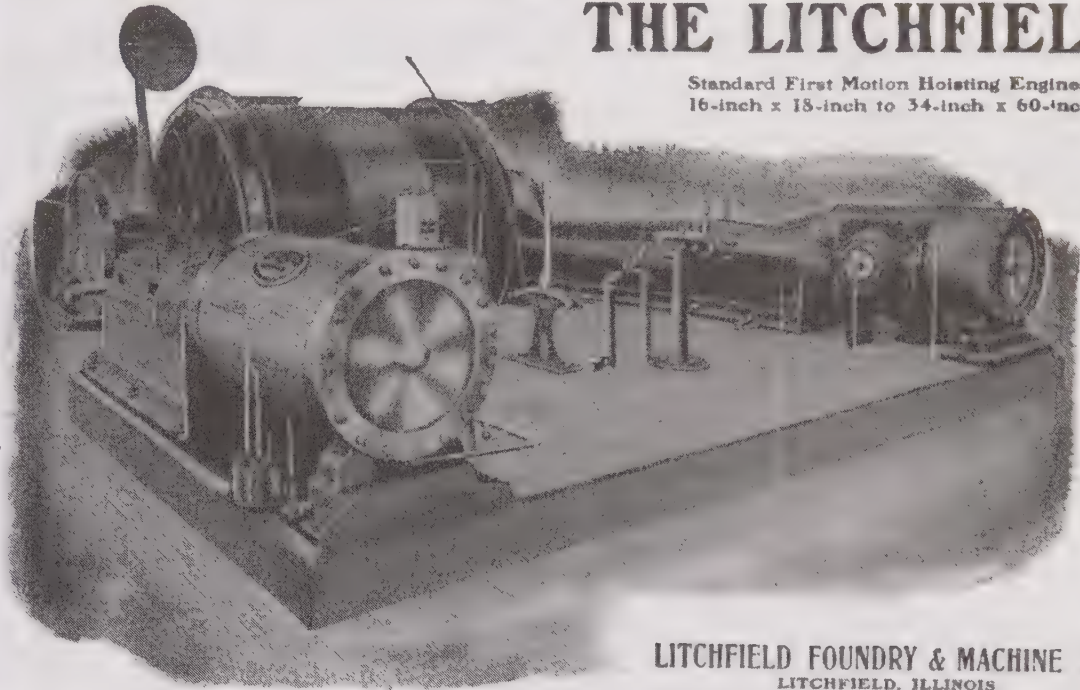
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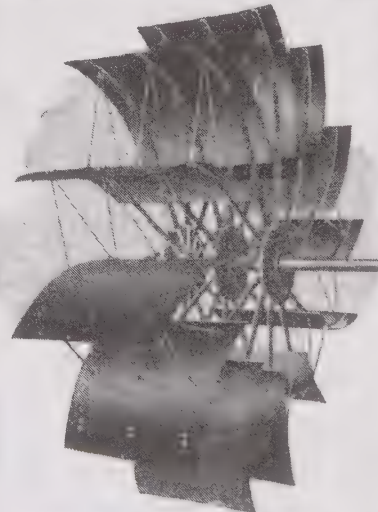
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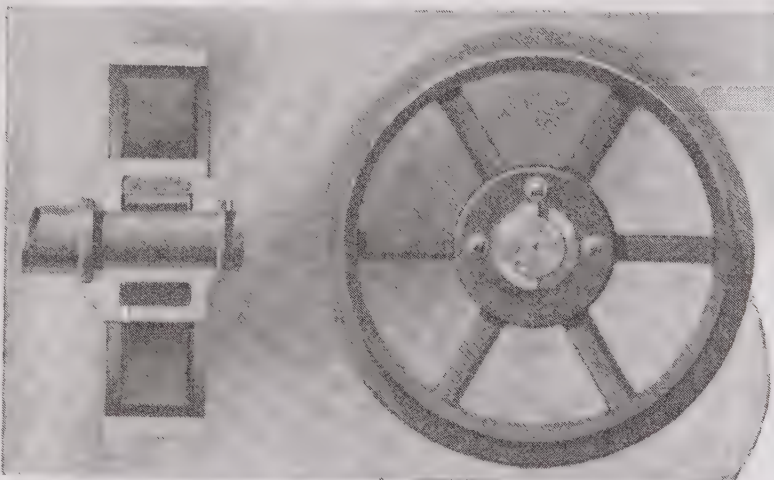
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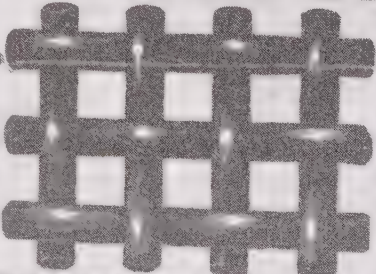
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LITTLE STORIES ABOUT ENGLISH WORDS

Port and Starboard.

"Larboard" was formerly used to designate the left side of a ship, just as "starboard" is used today for the right side. In 1845 the British admiralty changed "larboard" to "port," in order that the word should not be confused with "starboard." "Starboard" is commonly explained as "steerboard," since in the old Norse days, when the steering was done with an oar, it was on the right side that the steersman stood on his elevated platform. "Lar" is supposed to represent "lower," the non-steering side being the lower, or humbler. But the Italians explain the word as "questa borda" and "quella borda," "this side" and "that side." "Port" is connected with "port," to carry.

The Dahlia and the Fuschia.

The dahlia rivals the hansom cab in the matter of having smothered the memory of the man after whom it was named. But persons who use them at lease pronounce "hansom" as Joseph Hansom pronounced his surname, whereas probably most people call the flower "daylia," thus getting hopelessly remote from the Swedish Dr. Dahl, the pupil of Linnæus, who brought this Mexican plant into cultivation in Europe. How many who know the fuchsia have ever heard of the sixteenth century German botanist Leonhard Fuchs? Germany, by the way, calls the dahlia "Georgine," in honor of another botanist, Georgi.

The Gypsies.

Many different names are possessed by the gypsies in various lands. The Arabs call them "Harami" (villains), and the Dutch call them "Heydens" (heathen). The Persian takes his name for the race from its complexion and dubs them "Karachi," or swarthy. A Scotch charter of the twelfth century mentions their Scotch name of "Tinklers," which is commonly supposed to be a corruption of tinker, although possibly the substitution of "t" for "z" has produced this form of the Italian "Zingaro," one of the most widespread of gypsy appellations.

Why We Call It "Tram."

"Tram" is derived from a man's name—Outram, the surname of Thomas Outram. Outram lived in Derbyshire, England, and in the beginning of the last century he invented a peculiar sort of track that diminished the friction between wheels and roadbeds. These tracks of Outram's, though nothing like a trolley track, were called at first "outramways," then "tramways," and when street lines and street cars came into existence they were dubbed respectively "tramways" and "trams."

What the Philologists Discover.

"To give the cold shoulder"—It was the custom in medieval France, when a guest had outstayed his welcome, to serve him a cold shoulder of mutton instead of the usual hot meal. Flushing, the man always took this hint.

"Deadheads"—In Pompeii a complimentary ticket to an entertainment took the form of a small ivory skull.

"He's a brick"—A visitor to Sparta found the capitol without walls, and asked the King what he would do, in case of invasion, in his wallless town. "Sparta has 50,000 soldiers," the King answered, "and each man is a brick."

"Catching a Tartar"—During the war between Russia and Tartary, a private soldier shouted, "Captain, I have caught a Tartar." "Well, bring him in," the Captain rejoined. "He won't let me," the soldier called despairingly, as his prisoner dragged him into the Tartar lines.

"To eat humble pie"—In the middle age, after a deer had been slaughtered, the master of the house and his family ate the choice cuts, while the feet, neck and head were made into a pie. This humble pie was served to the servants and retainers.

"Slang" From Shakespeare.

Users of everyday catch-words are constantly quoting that ubiquitous Shakespeare. "Dead as a door-nail," "long and short of it," "getting even," "tag-rag," "birds of a feather," "that's flat," "mum," "scarecrow," "solid," "milk-sop," "loggerhead," "bag and baggage," "a mere song," "dancing attendance," "send him packing," "kill with kindness," "Greek to me," "ill wind that blows no good," "give and take," "an eyesore," "to boot," and "the man in the moon" are all his.

Meteor and Meteorologist.

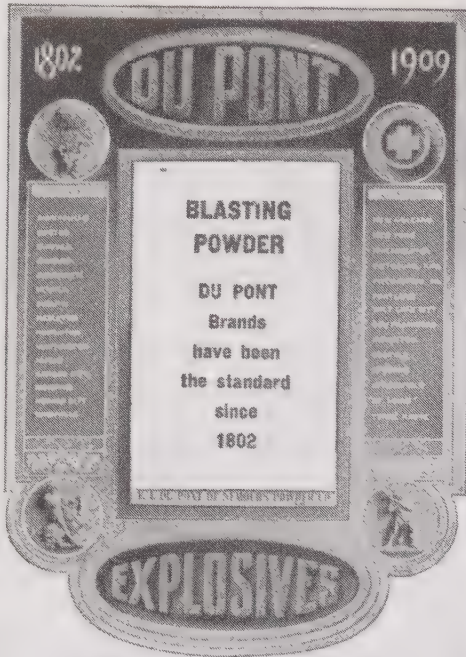
"Meteors" and "meteorologists" have little in common, although their origin is identical. "Meteor" meant a good many more things to Englishmen of a few generations ago than it does now, in accordance with the meaning of the Greek adjective, which signified "up in the air," so that "ta meteora," the things up in the air, meant the heavenly bodies. Winds and whirlwinds were aerial "meteors" formerly in English, clouds, snow and rain were aqueous "meteors" and among luminous "meteors" were reckoned rainbows and twilight. "Meteorology" preserves the memory of all this, but the word "meteor" has gone over altogether to the astronomer's sphere.

When the "Wits" Are Ailing.

In order to avoid the blunt word "mad" many euphemisms are resorted to in the English language. While "lunacy" refers to the supposed influence of the moon, "insane" simply means unhealthy; "imbecile" signifies only weak, and "crazy," meaning decrepit, almost corresponds to the slang "cracked." "A tile off," "not all there," "a bee in his bonnet" are only a few of the efforts slang has made to carry off the sad fact with an uneasy joke. "Lunatic asylum," for the old "madhouse," represents not only a great improvement in the institution but also in the term used to designate it.

The Story of Butter.

"Cow juice" is a slang term for milk, and sometimes for butter, in many parts of the United States. But the word "butter" itself almost certainly means something very like that by derivation. It is true that Pliny considered "butyrum" to be a Scythian word, but it seems clear that it was really Greek—from "bous," a cow, and "turos," cheese, and meant literally "cow-cheese." "Buttery," by the way, has nothing to do with butter, in spite of appearances, just as "pantry" has no connection with pans. The latter is the storing place of bread ("panis"), and the former is the late Latin "botaria," the place of the "butts" or casks.



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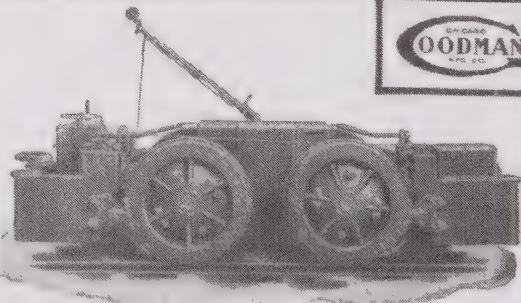
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Vol. XIII. No. 9.

CHICAGO, ILL., JUNE 29, 1909.

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The first annual meeting of the International Railway Fuel Association was held at the Auditorium in Chicago last week, occupying the first three days of the week. It was an important gathering and its discussions took wide range, covering many pertinent topics connected with the work of these gentlemen. The organization was effected only a year ago, and at the beginning the membership totaled thirty-five. This first annual meeting found them with an enrollment of 175 and growing interest that foretakens the still further growth in usefulness as well as numbers. Over ninety members registered during these meetings, an unusually large percentage for a membership scattered over the entire country.

The business which brought these men together was to exchange ideas and experiences in regard to the business in which they are engaged, and for that reason the papers and resultant discussion filled in about all the time they were in session. The second day was given over to pleasure, which combined profit, as they made an excursion to Gary and visited the great steel plant. This trip was by steamer, and was much enjoyed. On the third day the noon

adjournment was utilized for the most part in a visit of inspection; a new fire-door for locomotive engines and a new type of self-emptying box car were seen and explained.

The officers chosen for the ensuing year were: President, Eugene McAuliffe, Chicago; vice-presidents, W. C. Hayes, New York, and J. H. Hibben, Parsons, Kan.; secretary, Don B. Sebastian, Chicago; treasurer, J. McManamy, Grand Rapids, Mich. Directors—R. Emerson, South Bethlehem, Pa.; J. W. Hardy, Chicago; David Meadows, St. Ontario, Ont.; George M. Carpenter, Nashville, Tenn.; for the term of one year, and the following for the term of two years: T. E. Adams, Pine Bluff, Ark.; T. P. Edgar, Dayton, Ohio; R. Emerson, South Bethlehem, Pa.

The meeting of 1910 will be held in Chicago.

The papers read at the meeting were carefully prepared in advance by committees appointed beforehand, and the results were most satisfactory in that there was in every case a paper well worth the hearing and well worth the subsequent discussion it received. A number of these papers are printed herewith, the names of the committee preparing the papers being appended:

DIFFICULTY IN PRODUCING CLEAN COAL

It is likely that when the executive committee of this association assigned the subject under discussion to this committee, they had before them complaints of impure coal or engine failures, and were prompted to believe that coal operators are confronted with serious difficulties in producing coal which is clean and satisfactory to the purchaser. The preparation of the coal, including sizing, and the removal of foreign matter, are of the greatest importance, and much of the trouble incident to mining and selling coal is due to carelessness in this direction.

The following causes enter into the subject:

First—The physical condition of the vein, mine and mine equipment.

Second—The class of labor that produces and handles the coal.

Third—The conditions surrounding the sale of coal, including the prices obtained.

The most important feature in the production of clean coal is the coal vein itself, and when it is clean and free from partings, it is a very simple matter to produce clean coal. Frequently, however, and more especially when the veins are thick, one or more partings occur, and then the question of removing impurities becomes of vital importance. When the partings are thick and the coal is mined

by machines, the impurities are not so much broken up as when they are thin and the coal is shot off-the-solid. Frequently bone coal, which runs very high in ash, occurs in the veins, and this is more difficult to remove than slate on account of the resemblance to good coal. It must be borne in mind that the removal of impurities in the mine by the uncertain flickering of a miner's lamp is not as readily accomplished as if the work were performed in broad daylight and under more favorable conditions. Where the veins are thin and bottom has to be taken up, or the roof shot down to make headway for men and mules, part of this material becomes mixed with the coal; especially in solid-shooting mines where the roof is weakened on account of heavy powder charges, and often draw-slate comes down with every fall of coal.

One of the principal duties of the pit bosses, or inside foremen, is to visit the working places and inspect the cars which are being loaded to note if due care is taken to remove impurities. A further inspection of the coal is made after it has been hoisted, and is dumped into the cars. Generally dock bosses are employed for the purpose of noting the condition of the coal and reporting to the weighmen whenever impurities are found in a car. Where large quantities of impurities occur, special facilities, such as

picking tables, are provided to permit more thorough inspection; but more generally the coal passes into cars directly from the screens, and inspection is made in the railroad cars by men assigned to this work. In the organized districts, the dock boss usually has the title of foreman, in order to exempt him from the jurisdiction of the miners' organization.

While coal mine operators and superintendents give much attention to the preparation of coal, it follows that often carelessness exists and coal is not carefully inspected or picked, thus creating much difficulty and expense. The best place to remove impurities is at the face of the room, especially where large outputs are handled over one tippie, because the cars are dumped so quickly, making it impossible to give very thorough inspection of the coal and removal of impurities therefrom.

One of the main difficulties experienced in this connection is the employment of foreigners, who have had no previous experience in mining, and do not understand the English language, and, therefore, do not understand the conditions. Another difficulty experienced in districts where contracts are in existence with the United Mine Workers is the restrictions in penalties permitted under wage contracts. It is well known that workmen, generally, do not observe the discipline which prevails in foreign countries. There is a spirit of independence and carelessness on the part of the workmen, a condition which is responsible not only for the production of impure coal, but also accounts for the large number of accidents in this country compared with foreign countries. It is to be regretted that this lack of discipline is partly due to the support which discharged employees are able to obtain from labor organizations.

The irregular operation of the mine generally results in the loading of impure coal, since small particles of slate fall on the loaded cars standing in the mine, or at the face of the rooms and mix with the loose coal. In some districts, where the relative humidity is very high in the summer, the slate roof disintegrates badly, a condition which is not noticed in mines having sand rock roof.

The conditions surrounding the sale of coal have much effect upon the efforts of miners and coal operators in producing clean coal. Where competitive conditions exist, the operator may prevail upon his employees to exercise the best possible care on the grounds that business will be lost if impure coal is loaded. In this respect, an employee has the advantage of the operator, since he can move to a place where more favorable conditions exist and obtain more constant work. The coal operator cannot remove his mine or remedy all of the difficulties which are inherent to his property. The question of selling price and the cost of preparation, bear very close relation to each other. In the effort of the purchaser to obtain the lowest possible price, he may demand of the operator to sell his product at such a figure which would preclude the employment of the necessary machinery and men to insure the best preparation, and yet the purchaser is not always in a position to grant a fair price even if he is aware of his unreasonable demand. The contract prices paid for railroad coal in the various districts, and by the leading consumers, are well known, and few purchasing agents care to assume the responsibility of paying a higher price than is paid by competing lines, though it is believed that often economies could be effected by an arrangement whereby a premium would be paid for clean coal with a deduction for impurities.

As far as possible the inspection of coal by purchasers should be made at the mine, in order to know the conditions existing when the coal is loaded. The top of a car can easily be picked carefully, and especially when drop-bottom cars are used it would be difficult to detect the impurities contained below the surface. Sizes used for loco-

motive purposes cannot always be disposed of commercially, and rejections at points far distant from the mines may work a serious hardship on the producer and the railroad as well.

It is believed that fuel contracts should be based on a stipulated amount of ash, with penalties for an excess and premiums for reductions. This system would have the effect of encouraging operators to provide better facilities and employ the best means of preparation. The railroads would profit by reducing the haulage of inert material and the cost of handling the coal and ashes. While the expense of analysis may seem excessive, it would give the assurance that fuel inspectors are not discriminating against or favoring certain operators, and with this information at hand the officials in charge of locomotives could insist upon definite results. Enginemen will often resort to the excuse that poor coal was responsible for a delay, believing that it is the simplest method of preventing trouble for themselves, or shielding other parties. Engine troubles occur more frequently during the busy period, because they are of more importance at that time, and are, therefore, noted more carefully.

The reference to impure coal in this article relates entirely to foreign matter, such as slate, bone and sulphur. Where screened coal is purchased, the term "dirty coal" is often wrongly applied when an excessive amount of fine coal is found with the coal. Allowance should always be made for breakage which will occur in handling, and excessive breakage is often charged to the coal producer when the methods or machinery employed by the railway company are responsible. On certain chutes the fine coal will accumulate on the bottom of the bins, and while one tender will receive the coarse coal, the next will get all of the dust and slack. This feature is beyond the control of the coal company.

It is believed that the best results from bituminous coal are obtained when the different sizes are separated. Mine run coal, containing all sizes from the finest particle of dust to the coarsest lump, will not give the same results as when each size of coal is burned separately. These, however, are matters which should be properly discussed under a different heading.

A thorough understanding between the operator and purchaser should be had when contracts are made, as to preparation, and if difficulties arise under the contract, there should be a willingness on both sides to be reasonable and fair with each other.

CARL SCHOLZ, Chairman,
J. VAN HOUTEN,
J. R. RYAN,

NORTH DAKOTA'S LIGNITE INDUSTRY.

All of the mineral fuel mined in North Dakota is brown lignite, extensive beds of which underlie the greater part of the western half of the state. This lignite is not a fuel of high grade, but is well adapted for use in the manufacture of brick. It is comparatively smokeless and sootless in combustion and one ton is said to be equal to a cord of ordinary brickyard wood.

In sympathy with the general depression, and also owing to the milder winter of 1907-8, the production of lignite in North Dakota decreased from 347,760 short tons, valued at \$560,199, in 1907, to 320,742 short tons, valued at \$522,116, in 1908. Notwithstanding the decrease in production, the number of men employed in the lignite mines increased from 562 in 1907 to 631 in 1908, and the average number of working days decreased from 223 to 181. The average production per man was 508 tons in 1908, against 619 tons in 1907, while the daily production for each employee increased from 2.78 to 2.81.

CORRECT WEIGHING OF COAL AT MINES

The problem of obtaining correct weights on coal at the mines or on railroad track scales in transit presents difficulties chiefly because of the volume, and the dispatch with which the traffic is handled. The problem is one which confronts the mine operator from the time he starts the operation of his mine until it is worked out.

Coal is sold entirely by weight; therefore, the coal operator must ascertain the weight of the coal produced in order to render invoices thereon, and if the weight is correctly determined in the first place, it should answer the purpose of all concerned; namely, the coal operator, carrier and consumer, excepting where circumstances may arise requiring check weighing to test the accuracy of the original weight.

Regardless of whether it is the duty of the mine operator or the carrier to determine the correct weight, or whether it is a joint responsibility of these two interests, the fact remains that coal ought to and must be weighed in a manner insuring accuracy and full protection alike to producer, carrier and consumer.

The miners want pay for the actual weight of the coal they dig, and to make sure that they get what is coming to them, they appoint as check weighmaster one of their number whom they station at the tippie scales.

The coal operators want pay for as much coal as they pay to have mined. It is a poor mine superintendent who does not maintain constant comparison between the total of the miner's weights and the weights disposed of, or invoiced, to all customers.

The railroad companies want pay for their transportation services on the basis of the actual weights tendered them at point of shipment. The rates named in the published tariffs are established on that basis; coal is almost invariably sold and invoiced on that basis; the railroads themselves are immense consumers of coal and pay for

themselves, that the correct weights are being determined and applied in invoicing, and in assessment of freight charges.

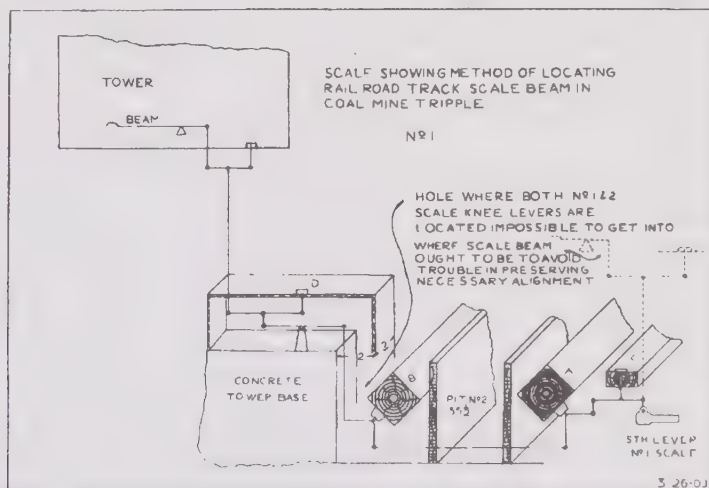
Convince the consumer that all of his coal is being weighed at the mines or primary weighing points with scrupulous care and accuracy, that the correct weight is being determined and certified, that proper care is being taken to avoid actual loss of property in transit, and he will be satisfied regardless of any ordinary inherent shrinkage, washed coal excepted.

There are conflicting views as to how and where the scales should be located to properly serve a mining district. Some advocate the placing of scales with long platforms directly under the mine tippie so that each empty car as placed for loading may be weighed light, and again when loaded, while on the scale.

Others prefer one scale above and another below the tippie, both gravity scales, so that the empties may all be weighed upon the upper scale as the mine is served, and on the lower one as the loads are dropped from the mine.

Others advocate the concentration of the weighing upon one or a limited number of track scales, conveniently located to serve a district or group of mines, such weighing being performed with the aid of switch engine.

The scheme of having track scales located directly under the mine tippie involves a very considerable expense for scales, to which should be added cost of maintenance and depreciation. Where the coal is sorted or prepared as mined, a separate scale is required under each loading chute. But where we have such installations, it is difficult to maintain sanitary conditions in and around the working parts of the scale on account of the immense quantity of coal, dust, and refuse falling upon the scale platform, working its way into the scale pit, and obstructing the platform, bearings and other parts of the scale.



what they get on the basis of the actual weights as determined at the mines, or primary weighing stations.

The consumer wants to pay for only as much coal as he bargains, no more. The coal operator and the carrier should co-operate steadfastly to satisfy him, and likewise

The knee levers, so hard to keep in line, are the right angles attached to the timbers A and B.

To make it possible for the mine weighmaster to weigh both the miners' carts and the loaded freight cars, the beams for such scales are usually located up in the tower,

near the tippie scales. This is accomplished by means of a series of connecting roads and knee levers reaching from the end of the fifth lever underground to the butt of the scale beam away up in the tower, the distance ranging anywhere from twenty to ninety feet. An illustration of one of these is given on page 2.

Many of the adherents to this plan generally concede that the track scale beams should be removed from the mine tower and placed upon the ground near the end of the fifth lever, thus doing away with the long stretches of extension rods and knee levers and avoiding the damaging effect from the vibration of the mine hoist and shaker screens.

Four-Section Track Scale Recommended.

Where scales of five (or more) sections are in service, it is very important that the fastening, securing the even extending levers to the scale foundation, be securely anchored because the pull upon both arms of said levers is upward, and unless these parts are firmly anchored and their correct alignment preserved, the scale will show inaccuracies, weighing the same load differently when placed in different positions upon the scale platform. It is recognized that the closest attention should be given to keep such scales clean and the platforms, bearings, and working parts, entirely free of refuse. To this end, it is suggested that owners place the responsibility upon some designated employee, who shall be required to render weekly written report showing that the matter is receiving his constant attention. It is also suggested that such employee be required to make weekly test of each scale by carefully weighing a loaded car in three positions: first, near one end, then in the center, and finally near the opposite end of the scale platform, and if practicable he should use the same car to test the several scales. The variations in weights thus developed should not exceed 100 lbs. Where greater variations show up and the cause cannot be located and overcome, the scale inspector should be sent for.

Recognizing the greater difficulty of keeping in accurate weighing adjustment track scales composed of more than four sections, the scale manufacturers are now building four section scales 42, 46 and 50 feet in length. Formerly their maximum length for four-section scales was 42 feet. To avoid deflection under load, on account of the greater spans between main lever bearings, heavier girders and parts throughout are specified and furnished. The long four-section track scale, heavy 100-ton capacity, is strongly recommended.

The scheme of having one track scale above, and another below the mine, contemplates that the cars shall be weighed by gravity; that is, without the use of switch engine to spot the cars on the scale—but in actual performance many cars develop unwieldy brakes at critical moments and in consequence the cars go dashing over the scale, entirely beyond the control of the rider or weighmaster. Of course such cars should all be marked for re-weighing or to be switched out and brought back to the scale.

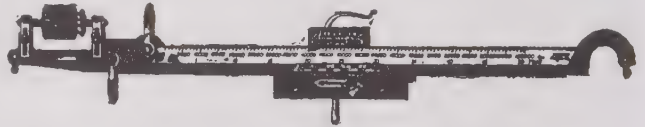
One of our members adhering to this plan has written the committee as follows:

"In all cases the mine management should insist on the car dropper examining car brakes carefully before the car is loaded. If the brake is defective the car should be dropped through empty, if temporary repairs cannot be made at the mine. If the hand brake is in good order, there is no reason why cars cannot be brought to a full stop on scale platform if approach tracks are up level."

Advocates of the scheme of having only a limited number of first-class railroad track scales, conveniently located to serve a nest of mines, have strong arguments in their favor, to-wit: economy in cost, maintenance, and deprecia-

tion of scales; concentration of the weighing so that same may be performed with special care and accuracy, each car standing and uncoupled. But, quite naturally, the coal operator prefers to weigh his own coal, because he has greater confidence in the results obtained from a service which he himself controls. The railroad operating official usually prefers to have him do so, provided such weighing is done with sufficient care and accuracy. By the use of gravity scales, the weighing at many mines is performed without the aid of motive power, thus effecting a saving but under the disadvantages above referred to. Under the plan of having one scale serve several mines, mines could arrange for joint weighmaster at scale.

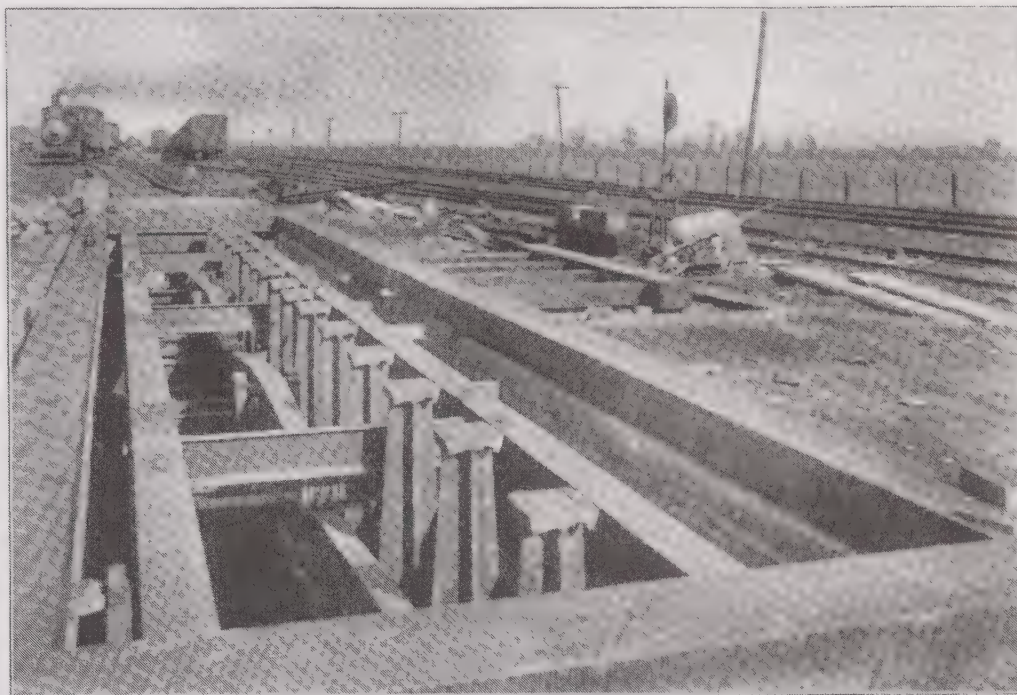
Two or three years ago the owners of five fully developed coal mines in a certain district were having difficulty with the weights. Each mine was equipped with four railroad track scales, one to serve each class of coal (lump, egg, nut, slack) as mined. These scales had long platforms so that each car could be weighed light and loaded. The scale beams were located up in the tower, to enable the tippie weighmaster to perform all of the weighing. After much tinkering with the scales, it was decided install one up-to-date, heavy capacity, track scale, steel construction throughout, concrete foundation, said scale being equipped with type registering beam and manifold scale tickets. (See cuts following.)



The type registering beam, which has no superior as a means of avoiding clerical error in getting record of the scale's indicate dweight, is shown above. The cost of full capacity 100-ton beams is \$100.00 in exchange for the old beam. The difference is less than when type beam is specified with the purchase of new scales.

All of the coal coming from these mines was checked weighed and the mine promptly furnished with carbon leaf of original type registered scale ticket. The five mines referred to immediately abandoned the use of their own scales and commenced billing and invoicing the coal at the weights determined upon the one railroad scale; and recently when a sixth mine was sunk by the same owners, it was definitely determined to be more economical to have all of the weighing for the six mines performed on the heavy capacity railroad scale described. It was estimated that to equip each of the six mines with three or four up-to-date, heavy capacity, track scales would call for an expenditure of from \$25,000 to \$40,000, and the interest alone on such an amount at 4 or 5 per cent would more than offset the additional cost of the time and labor of switch engine, crew and weighmaster, spotting and weighing the cars, to say nothing of the difference account depreciation and cost of inspection, maintenance and repairs, upon so many mine track scales.

Considering the many ill effects which follow in the wake of defective or improperly installed scales or careless methods of weighing or recording weights, it will pay all concerned to take the necessary time, care and precaution and get correct results in the first place, even though some additional initial expense will be thereby entailed. The mine operator, railroad or individual who performs the initial weighing of any commodity that is sold by weight has to reckon with and protect the rights of the purchaser and consumer. It is economy and good business policy to perform the service in a manner justifying entire confidence and precluding likelihood of error. The slight additional expense incurred in the first place will be more than com-



The above cut shows the Atchison, Topeka & Santa Fe's adopted standard four-section, 48 foot platform, 150 tons' capacity railroad track scale.

compensated by the increased satisfaction of customers, the absence of claims, and a better feeling generally. To bring about such result, the coal operators and the railroads can afford to enter into very comprehensive weighing arrangements and, if necessary, joint ownership and operation of the coal weighing scales.

Special Supervision Over Initial Weighing.

In the interest of securing proper care and attention to the operation and maintenance of mine scales and weighing thereon, entire supervision over the mine track scales and weighmasters has already been delegated to the superintendent of the Western Railway Weighing Association in several coal mining districts, and others are about to follow. The superintendent has employed several expert scale inspectors and repairers. These inspectors operate the track scale testing and repair cars and have full authority to specify and require suitable repairs and the maintenance of sanitary conditions, or the alternative of abrogating all weighing arrangements. Where such plan has been in operation for a sufficient length of time, the results show gratifying accuracy as reflected by checkweighing. The cost of such service is assessed against the owners of the scales upon equitable self-sustaining basis.

Importance of Solid Scale Foundations.

The capacity and loading of coal cars has increased to such an extent as to require scales of much greater capacity than formerly were necessary, and there is no economy to the owner of a scale in failure to provide proper foundation therefor. The scale manufacturers, who would have every reason to recommend the most economical construction, are pronounced in their advocacy of suitable foundations. Their consent to unstable foundations is always negative. It is

given with a warning to the prospective users that they look for inaccuracies. The following is quoted from one of the best authorities on that subject:

"First of all a good foundation must be provided. The accuracy of all scales is dependent upon a solid and well-maintained foundation. The best scales will get out of order as readily as inferior ones if not provided with good foundations. Bad foundations cause 90 per cent of the trouble with wagon and track scales. It is, therefore, imperative in setting up a scale that this receive the first consideration. A foundation set on a few timbers, placed on the bottom of a sand hole, will not withstand the strain to which scales are subjected and will soon show that construction of this sort is unreliable and, ultimately, costly. Stone, hard brick, or concrete, only, should be used for foundation. It is also imperative that the scale pit be provided with an efficient drain."

Copying or Telephoning Weights.

The telephoning or copying of weights should be avoided to the furthest extent possible, and where this dangerous practice must be tolerated, the record telephoned or transcribed should invariably be checked back against the original to insure correction of any errors. Local freight agents at way-billing stations should be expressly cautioned regarding this.

The type registering beam and manifold scale ticket with loose or detachable gummed ticket for transmission and adherence to the way-bill is viewed with great favor by those seeking to entirely eliminate mistakes in recording, transmitting, and applying weights. These two devices can be utilized successfully to abridge the many pitfalls between a correctly balanced scale beam and the way-bill.

(Continued on page 242.)



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The Mystery of the Universe.

JOHN TYNDALL



COMPARE the mind of man to a musical instrument with a certain range of notes, beyond which in both directions exists infinite silence. The phenomena of matter and force come within our intellectual range; but behind and above and around us the real mystery of the universe lies unsolved, and, as far as we are concerned, is incapable of solution. 3 3 3

This is the strongly favorable time to advertise to the retail coal men what you have that they could use during the coming winter. The convention season is at hand and thousands of retail coal merchants make use of their vacation to inquire about prices and make contracts for coal for the coming winter. The columns of FUEL are read by a great army of them, and if your card is not in its column, naturally they wonder why it is not there. The operator or the jobber who makes his name best known will, other things being equal, get the orders when a decision is reached. Get in line, or get out. The prosperity procession is on the march.

USEFUL AND VALUABLE ARTICLES.

There is some mighty good stuff in this issue of FUEL, as there has been in all the recent issues. Four articles in this issue, if carefully read, will return to any coal operator more value than the price of many years' subscriptions. Read Mine Inspector John Verner's article on the action of mine air in explosions, and if you can criticize any of his conclusions, we shall be glad to print what you think about it. The three papers read at the meetings of the International Railway Fuel Association are the work of many men who have had wide opportunities for observation, each being prepared by three men after correspondence with many others on points concerned. Three great problems that confront the production of coal are elaborately treated in them. There are other valuable papers read at this meeting which FUEL will use in later issues.

THE BETTER PRODUCTION OF COAL.

The present tendency is manifested in the meeting in Chicago the past week of an association of railway fuel agents from all sections of the country, and in the discussion by them of the best manner in which they may perform their duties in looking after the fuel supplies of the great railroad systems. The growing scarcity of coal, though not yet keenly accentuated, is realized by all who come into actual contact with the industry, and the problem is being considered of getting the most possible out of the fuel bought. The one thing that most keenly appeals to the wide-awake coal producer to-day is how to prepare his coal so as to give it the most effectiveness when used for motive power, light or heat. And to do this well is the problem that the coal operator, where he has not already prepared for it, must consider.

The noticeable thing about the coal industry is that it is growing bigger and bigger all the time, and that competition is more keen in prices and in preparation than ever before. The appliances for mining coal that were considered entirely sufficient a few years ago are felt to be totally inadequate today, and equipment that was very recently ample has grown in many cases inefficient when the higher character of the product is a necessity. The operators are realizing this, and very many are planning to make great improvements with the coming of better times and the certain revival of industrial activity. The best judges, those best qualified to speak, are unanimous in declaring that a period of unexampled prosperity is at hand. Its revivifying influence is already felt, and the full tide is now rising.

When the prosperity is on us with its full force it will not be the best time for buying new and improved machinery to enter at once into the active competition for business. The makers of mining machinery will then have orders ahead, perhaps, and delay, peculiarly costly at such times will of necessity result. The coal operators are preparing, and the manufacturers who wish a share of the business are letting the coal operators know that they can do their part in supplying them. But there are manufacturers looking for business, however, who have not taken care to place their cards where they will be read with most

interest—in FUEL, the paper devoted to the interests of the coal operators in particular and read by them more closely than any other journal in the trade.

FUEL has passed almost to the end of its sixth year, and every year it has been read by an increased number of people. Today it stands higher in the opinions of its readers than ever before, and weekly prints the best there is. The makers of mine machinery and the merchants who deal in mine supplies of all descriptions may well stick a pin here in deciding where they will advertise, for the way to reach the coal operator is through FUEL's columns, because it goes to the coal operators. If you want to sell to the coal operators, what profit to advertise in papers that go somewhere else? Advertise directly to the man you are after, and you will get him.

There are people who are boasting in a way that's just like roasting, and they're coming in your office every day; just to hear them tell the story there'll be no one else in glory but themselves—there are no others on the way. If you don't discount their statements, make some rather large abatements, and they get a chance to grabble up your cash; the new buyers you expected will be somewhat disaffected, and your hopes will meet a sure and final smash. There is much good advertising, but right here we are advising that the stuff you see in FUEL is the best; for the Illinois operator is the man you want to play to if you've anything in which he might invest. They all read this FUEL paper, and they rarely cut a caper with the firm that never has its name in print; if you want to sell them something, don't stand wishing like a dumb thing—but get wise and find out how to take a hint. There is nothing sad or solemn in this editorial column—we just try to clarify the situation; with that new machine just try it—we feel sure the folks will buy it, and we'll send you full details on application.

Good growing weather like we have been having means prosperity for the farmer, plenty of spending money, more goods manufactured and sold, and more coal to be burned. Speed up. It's your move.

The Patterson Contracting Company of Pittsburg engaged in sinking two shafts at the \$1,000,000 Filbert plant of the H. C. Frick Coke Company, succeeded in reaching the coal at a depth of 600 feet in shaft No. 1. This shaft will be ready to operate in July. Shaft No. 2 will not be down to the coal before the middle of August.

Notices have been posted calling the employees of the Peerless mine of the Card & Prosser Coal Co., to work, at Washingtonville, O. This mine stopped work in January when the company refused to pay for special men for the firing of shots. The company has agreed to put on shot firers.

Local coal men who were interested with John S. Jones of Ohio and Illinois in his suit against George J. Gould, Joseph Ramsey and William E. Guy to recover \$460,000 and interest claimed by reason of purchases of coal lands in Perry county, O., for the defendants, who then were managers of the Little Kanawha, have received word that the supreme court of New York had decided against Mr. Jones and his associates. The suit was started in 1906, and

in one court Mr. Jones secured a verdict. Mr. Jones and his associates purchased thousands of acres of coal lands in Perry county, expending about \$450,000, and then on the collapse of the syndicate, the lands were left on their hands.

J. V. Thompson, of Uniontown, Pa., has closed the purchase of the 4,000 acres of coal of the Dola Coal and Coke Company on the Short Line railroad, near Dola, W. Va., for \$600,000.

Sheffield Coal and Iron Company has filed with the probate judge of Franklin county, Alabama, a mortgage in favor of the Bankers' Trust Company of New York for \$750,000 for record in the mortgage book of Franklin county.

The Pittsburg Terminal Railroad and Coal Company has begun work on opening mines, and with the arrival of the new freight cars, which are being received now at the rate of about 25 daily by the Wabash-Pittsburg Terminal Railway, it is expected that shipments will begin shortly.

The Mammoth Vein Coal Company, operating two large mines at Fort Smith, Ark., has brought suit against the Midland Valley Railroad Company to recover \$447,363.29, alleged to be the amount of loss to the plaintiff company through a failure of the defendants to furnish cars for interstate shipment of coal.

Real estate agents, said to represent the New York Central interests, have secured options on a strip of property south of Indiana, Pa., which, it is said, will be used in giving the Pittsburg & Lake Erie an entrance to the coal fields of that section. The property on which options have just been secured adjoins the property owned by Colonel J. M. Shoonmaker, vice-president of the Pittsburg & Lake Erie, and other New York Central officials.

Preparations are being made by the Arkansas Anthracite Coal Company to develop its coal lands in Logan county, Ark., comprising about 16,000 acres. A railroad is now being built for the company to a connection with the Arkansas Central at Paris, and a new town, to be known as Scranton, which is being established in the heart of the coal field. The town is being promoted upon strictly modern plans. Nothing but brick, stone or cement buildings will be permitted in the business district.

A report that appears to have a substantial basis has it that within the next few weeks the Baltimore & Ohio Railroad Company will send a force of engineers to the Bens Creek valley to make the preliminary survey of a new railroad that will be constructed in the next two or three years to tap the coal fields of the Merchants Coal Company, a portion of which has been purchased from the Kennerly Coal Company.

The Alabama Coal Operators' Association elected the following officers for the ensuing year: G. B. McCormack, president; John W. Sibley, vice-president, and Capt. J. W. Allen, secretary and treasurer. All routine business was transacted at the meeting.

The coal tide-water shipments from West Virginia during April aggregated 1,549,755 tons, as compared with 1,440,805 tons for April, 1908. The tonnage for April, 1909, does not include 75,924 tons shipped by the Western Maryland Railroad over its Port Covington pier at Baltimore.

CHICAGO DEMURRAGE RULES NOT SO BAD

That Chicago is really pretty well off, thank you, in the matter of demurrage rules, was the gist of a report made by J. D. Sallmon to the members of the Chicago Coal Dealers' Association, whom he represented at the recent hearing in Washington for the formulation of demurrage rules to be uniform, as far as possible, for all sections. In beginning his report Mr. Sallmon said that all were doubtless familiar with the fact that the meeting had been held and that he and C. M. Moderwell had represented the association at the hearings. There were delegates from many of the state railway commissions and one from the interstate commission, and about 300 or 400 present altogether, more than the room would hold. The great fight of the railroads was to have the free time cut down, they claiming that the only reason free time of four days in the East and three days in the West was given was to offset any delay that might have occurred in the transportation of the coal. They wanted to cut down the time to not more than 48 hours altogether, and in some states even now only 24 hours is allowed, and no notice given of arrival of cars—this particularly in the Pittsburg district.

The shippers had many meetings in Washington, but could not get together. Michigan has the equivalent of five days' free time, the most liberal of any state, this being because of water competition. If the railroads made hard rules the shippers shipped by water, an easy thing in Michigan. In the East various plans were in operation, but none of them could be agreed on. He personally fought for an average plan and thought he had some influence. Interstate Commissioner Lane was not favorable to any average plan and could not see it, but he believed an average plan of some sort would go into the rules formulated by the committee. The association had until the 15th of July to file a brief in relation to the rules desired. The Illinois Manufacturers' Association was preparing a brief to file.

The railroads did not object to the average plan, as Mr. Lane asked for objections and not a single railroad representative objected. Under the average plan in the East in one instance there was a single man who handled the plan for the shippers of four states. This plan favors the railroads as well as the shippers. Mr. Lane did not believe in allowing more free time on a large car than on a small one, the tendency being to increase the size of all cars now being builded; in some parts distinction was impossible, and whatever rules were adopted must conform to local conditions. In the Pittsburg district the free time was limited to 24 hours and except where shippers did their own switching, and they sometimes unloaded within five hours. These regulations could not be made to apply to Chicago with justice. This average plan allowed a credit on future cars for all time saved by the shipper in unloading within his specified time, but the holding of any car under such a credit for an unreasonable time was not allowed. In Michigan the limit was seven days on any car. Settlements were made monthly, so that credits were not carried over into the next month. Each road's cars must be handled separately, as credits of time on one road's cars would not apply to demurrage on the cars of some other road. If they could have the optional average plan in Chicago on the present basis he did not think five per cent of the demurrage paid at present would be paid by the coal dealers.

Thomas N. Mordue said his company had handled 4,200

cars at the docks on the average plan and did not have to pay a single dollar in demurrage.

Mr. Sallmon said the average plan was not a good one for the shippers of coal. Detroit was an instance of this, as the coal market there was always demoralized and jobbers never ordered coal from producers, but ordered everything in Detroit. He used to think Mr. Sanford a demurrage sharp, but now he thought him a gentleman. Some of the men in similar positions in the East ought to be put in the penitentiary for their manner of enforcing demurrage rules, their only idea being to get the dollar. The advantages of the Chicago rules were very many; they were treated better than in most other places, but there was discrimination in favor of the public team tracks.

After very full discussion it was voted on motion of Mr. Mordue that the association file a brief before July 15 and that it be placed on file also in Commissioner Halllock's office for examination by any members who might wish to make suggestions.

Collections of \$907.62 since the last report were made.

There was some talk of the improvement in matters of weight brought about by the establishment of the weight inspection system on the Chicago & Eastern Illinois railroad, and in discussing variations in mine weight and destination weight on coal from southern Illinois Mr. Sallmon said it would save the members of the association one hundred thousand dollars a year to have a man in that field who should weight every car before shipment and then see that it was again weighed on arrival at 37th street in Chicago. This matter was referred to the trustees for consideration and action. The opinion prevailed that mine weights were carelessly ascertained.

There were several little talks, and the meeting adjourned. Despite the uncomfortable weather the attendance was good.

GOULD COAL MINES IN OPERATION.

All the coal mines along the West Side Belt Railroad, which belong to the Gould interests and which were formerly operated by the Pittsburg Coal Co., have been placed in operation under the management of the Pittsburg Terminal Railroad & Coal Company. The mines have been idle for some weeks, during which time new machinery for loading cars has been installed, and other improvements to facilitate the handling of coal over the Wabash lines were made. B. F. Bush, receiver of the Western Maryland Railroad, is president of the Pittsburg Terminal Railroad & Coal Company, and W. W. Keefer, formerly general manager of mines of the Monongahela River Consolidated Coal & Coke Company, is vice-president and general manager in charge of operation. The 500 steel hopper cars ordered some time ago by the Wabash-Pittsburg Terminal Railroad are being delivered at the rate of 25 a day by the Standard Steel Car Company, and a large number of them have been placed in service to handle the output of the West Side Belt mine.

A license to do business in Virginia has been issued to the Big Vein Pocahontas Coal Company, a corporation organized under the laws of West Virginia, a written power of attorney having been filed with the commission appointing John E. Ambrose, of Pocahontas, Va., statutory agent. Maximum capital authorized by charter, \$300,000. Objects: Coal mining business.

CONSOLIDATION OF RETAIL COAL DEALERS

Northwestern Association Absorbs the Iowa and Nebraska and Has Now 3,000 Members, Ending a Five Year's Campaign — Michigan and Indiana Dealers Back From Their Outing—Illinois and Wisconsin Meets This Week.

The eleventh and last annual meeting of the Iowa and Nebraska Retail Coal Dealers' Association was held at Des Moines this month. The coal trade journals as usual had no notice that the meeting was to be held until they saw it in the Des Moines dailies. Delegates came in so slowly that the morning meeting was dispensed with and the first session held in the afternoon. In his annual address President George Gregory urged the association members to use their efforts with the state railroad commission against approving the suggestions of the railroads concerning changes in the demurrage laws, and that they prepare for themselves such changes as the commission be asked to make. Three points in the present rules are objected to by the coal dealers. "The most flagrant discrimination in favor of the railroads is the fact that the shippers' side of the question is not considered at all," he said. "The rules, having been drawn by the railroads, consider only the railroads' side of the question."

"According to the present standards, no more time is allowed for unloading a large car than is allowed for unloading a small one. In each case, the receiver is allowed 48 hours in which to release the car, after which he is charged \$1 per day for the use of the car. The irregularity of shipments, the third complaint, often compels the coal dealers to handle three cars in one day, and they are allowed no more time to unloading three cars received on the same day than they are to unload one."

An address by Senator C. H. Van Law of Marshalltown, Iowa, was aimed at the growing trusts, which he declared a menace to the country. He said that the centralization of wealth and commercial power is the greatest menace to commercial advancement. He declared that it is bringing about the enslavement of the American people and dominates the minds of those who might rise in the commercial world were it not for the thought that their efforts would be thwarted by this centralized power in the event that they attempted to rise above the mediocre plane of a dispenser of the products of centralized wealth. He declared it to be the work of commercial and labor organizations, according to the senator, to rid the country of the evil effects of trusts and monopolies. This they can do by banding themselves closely together and having as their sole aim the enactment of legislation that will weaken the power of the concerns which control the output, fix the prices on various commodities and by underhand methods seek to eliminate all competition.

W. C. Strock urged the importance of cooperation among the retailers, the elimination of petty jealousies and the cultivation of a fraternal spirit.

On the second day, through the adoption of the report of the committee on resolutions, the Iowa and Nebraska Retail Coal Dealers' Association voted to disband their organization and unite for the furtherance of their ends with the Northwestern Retail Coal Dealers' Association.

The invitation to join that association was extended through the secretary, A. B. Reeves, and his invitation was accepted by a vote of the association. The campaign in favor of consolidation had been waged for five years. The Northwestern Association is composed of dealers in the states of North and South Dakota and Minnesota. It has a membership of 2,300 coal dealers in those states. The

Northwestern Association agrees to assume the \$1,800 indebtedness of the Iowa and Nebraska Association and to do its utmost to work for the interest of its members. Through the consolidation, the Northwestern Association is given a membership in excess of 3,000.

Lack of interest in the association by the coal dealers in Iowa and Nebraska and the fact that they were willing to contribute only their annual dues to promote the work, is given as the reason for the consolidation of the two associations. In his report to the association, Secretary H. L. Laird of Marshalltown stated that a majority of the work done last year was at the expense of the officers of the association. He also stated that the members gave no more freely of their time than they did of their money.

It developed in the report of the committee appointed at the last meeting to investigate the cost of handling coal, that in almost every instance a carload of coal received from a mine or a wholesale dealer ranges from 300 to 1,000 pounds short of the supposed rate. While the dealers make no accusations, they consider it strange that the discrepancies are never in favor of the retail dealers.

While its consolidation with the Northwestern Association becomes effective immediately, the officers of the Iowa and Nebraska Association will retain their offices until next January, when the annual meeting of the former association will be held.

The officers of the association for the last year were: George Gregory of Marshalltown, president; H. T. Folsom of Lincoln, Neb., vice-president; and H. L. Laird of Marshalltown, secretary.

MICHIGAN AND INDIANA ASSOCIATION'S LAKE TRIP

The roster of the Michigan and Indiana Retail Coal Association, as shown by the report of Secretary Harris in 1908, totaled 1,018 members accounted in good standing; in 1909 to this number has been added 62 new names, and 54 names have disappeared, leaving the present total 1,026.

The most important association gathering during the year was at Fort Wayne, Ind., January 19 and 20, the regular mid-winter meeting of the executive board, in combination with a general meeting to which all of the members in both states were called.

The matter of irregular shipments was an unusual annoyance and many members were seriously inconvenienced in consequence. A very considerable number of irregularities were directly traceable to the effect of the hard times and the unpropitious weather conditions which prevailed throughout the entire coal-selling season, the lack of demands causing accumulations at producing points, which in turn caused shippers to yield to temptations offered by consumers trying to affect a saving at the expense of their home dealers. Grange and gleaner societies were active, and there were others. As a rule, however, matters wherein the interest of members were involved yielded to the needs of the occasion and the trouble was eliminated.

A hard-times year is the most trying season an association can have. It is in such years that the need of the as-

sociation is most apparent, yet during such years the support furnished is noticeably lessened; members delay the payment of dues, and an accumulation of such debts hampers the usefulness of the organization and cripples it by a lack of funds. Negligence on this score on the part of any member means so far as he is concerned, an abandonment of purpose, for which the association stands, and the accumulated good results which have attended during the entire life of the organization.

Each of us knows the value of a strong organization, says the secretary, and it should be the aim of every member to take it upon himself to ascertain what the status of his immediate section is as regards the membership of the association; to use his best efforts for the upbuilding of the association by procuring the enlistment of all non-members possible and to furnish the secretary with the names of all such dealers, combining therewith a statement regarding the eligibility of each, and such information as will aid in an effort to interest them in the work of the association. An occasional report from each member, detailing conditions and matters of interest in combination with suggestions applicable, would be of the greatest value and assistance to your secretary; should a change of firm occur or a new dealer engage in the business it should be reported at once; it were better that ten reports of the same item be received than to have it missed by all.

The secretary's cash account shows that on June 1, 1908, the balance on hand was \$1,408.61; the year's collections were \$3,245; making a total of \$4,653.61. The disburse-

ments were \$4,008.15, leaving a balance on hand June 17, 1909, of \$645.46.

These were the vital points in the annual report of the secretary, R. E. Harris, to the Michigan and Indiana Retail Coal Association, which held its annual meeting in connection with a lake steamer trip and transacted the year's business. The outing was a great success in every way, and the meeting a gratifying one.

Fred A. Hobbs, former president of the association, read a paper on "Leakage in Business" in which he points out the little things that must be watched by the dealer if he hopes to succeed in the coal business. Bad debts, unnecessary expense and trying to handle too much coal for the size of the business were treated clearly, and the suggestions for the best methods of guarding against these evils made the paper a valuable one. The propensity to cut prices came, he argued, largely from the dealer trying to handle more coal than he could handle properly, the surplus found on hand inducing the reduction of the price in the hope of getting the coal out of the yard. A community could only use a given amount of coal and the amount was affected only by weather conditions, because people did not lay in more coal than they needed, even when the price was low. As to bad debts the time for precaution was before selling the coal. The accumulation of unpaid accounts made up the most undesirable form of assets which the coal dealer could have.

D. L. Tuttle, of Buffalo, New York, furnished a paper
(Continued on page 253.)

CONSOLIDATED COAL COMPANY'S NEW OFFICES

One of the interesting places to coal men visiting St. Louis is the new office suite of the Consolidated Coal Company of St. Louis, which the company formally occupied a

few weeks ago. FUEL has heretofore had mention of these new and elegant offices, and on this page and the next presents photographic views of the same. The vice-president and general manager of the company, W. L. Schmick, is a figure well known in the coal industry of the West, and a portrait of that gentleman and of the office he uses in



W. L. Schmick, Vice President and General Manager.



Vice President and General Manager's Office.

his daily work are given on this page. The views on the next page show the offices of other departments, and the office of the Western Coal and Mining Company, general sales agent. This is an allied company. These offices in the Syndicate Trust Building are well worth a visit from any coal men who may be in St. Louis.



General Office Work Room.



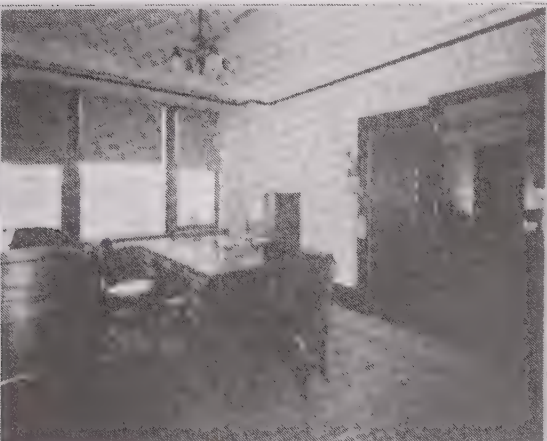
Western Coal and Mining Co. General Sales Agent.



Purchasing Agent and Superintendent of Stores.



Treasurer.



Auditor.



Auditor's Office Work Room.

RAILWAY FUEL ASSOCIATION

(Continued from page 235.)

They overcome many of the perplexities of incompetent, indifferent or dishonest help.

The coal operator is interested in weight accuracy because he can scarcely afford to deliver more coal to his customers than he actually sells, nor can he hope to satisfy them with less. The carrier is equally interested because its published tariff rates are based upon actual weights; the carrier is also a large consumer of coal.

The consumer's interest is obvious. It will pay to satisfy him that the work is being done with approved care and accuracy.

Motion Weighing on Scales Equipped with Automatic Attachment or by Hand.

Motion weighing on scales equipped with automatic attachment or by hand does not inspire confidence. The adherents to this plan count on the saving of time at the scale, and there is a slight saving of time. The owners of the automatic weighing device advocate weighing at the rate of two cars over-the-scale per minute. Cars can be weighed by hand, standing and uncoupled, on 46 or 50-foot scales at the rate of one car per minute, and where the weighing crew is experienced such service can be performed at the rate of one every 40 or 50 seconds. We have record of two cars per minute in drags of 5 to 10 cars.

The advocates of motion weighing have an abiding hope that reasonable accuracy can be attained by that method, provided all details are watched with the necessary vigilance, much depending upon the character of the weighmaster. But, whether weighing moving cars by hand or on scales equipped with automatic spring attachments, the weighmaster is required to enter quickly a lot of information upon the tape or his weight sheets; he is bound to feel that the number of "bobbles" or "bust weights" that he allows to pass over his scale furnish his employers with the measure of his personal skill, and there are times when he will feel that the tenure of his job is at stake. The average difference in time consumed at the scale, weighing cars, moving and coupled, versus weighing them standing and uncoupled, will not exceed 20 or 30 seconds per car. The cost of switch engine and weighing crew will not exceed 5 cents per minute. Question: Isn't it worth 2½ cents per car, or even 5 cents, to get a weight record of undoubted accuracy and thereby avoid the trail of complications otherwise resulting? Dissatisfied consignees, burdensome state regulations and supervision of a service which when properly performed in the first place will avoid misunderstandings and many harsh feelings between operator, carrier and consumer. If data could be obtained where careless weighing prevails we are sure that the average cost to the carriers of weight claim investigations would alone approximate 5 cents per car on the entire volume handled. Where one switch engine serves ten or twelve coal mines, the individual drags will average from 10 to 30 cars, the careful weighing of which should occupy as many minutes. The service can be done by motion weighing in a less time, but it is better to do it in a way, insuring the confidence of all concerned?

Cleaning and Preparing Equipment for Coal Loading.

Too much attention cannot be given to cleaning and preparing equipment for coal loading. All favor thorough inspection of the inside of cars before same are placed for loading, so that it may be known that they are in good repair, free of leaky condition or refuse of any kind. The preponderance of sentiment favors this work being done in



Western Railway Weighing Ass'n		Scale Ticket. (G. M. & P. Co.)		No.	
Date Weighed	2-10-9 P	Initials	A. J.		
Car Weighed	Chicago	Car Number	88983		
Uncoupled at	154 400 Gross	Wet	Scaling	Shooting	FORM 1
	44900 Tare	Date of Tare	Temp. Fins.	Gr. Doors	Sticks
	109500 Net	1809	Reels	Blocking	Dunnage
	Capacity 100	 Secretary of Santa Wagonmaster			

the railroad yards where cars are assembled in large numbers for distribution to the mines, although in exceptional cases such repairs and inspection cannot receive attention until the cars reach the mines. No mine operator or superintendent can justify the loading of any car that will leak when moved.

Damage to Freight Equipment by Box Car Loading.

Care should be taken by mine operators to avoid damage to railway freight equipment by box car loaders. All are agreed that such damage can be entirely avoided if the proper care is exercised. The damage most frequently occurs to the door posts, roofs and ends of the cars. Close supervision and reasonable penalties upon those who are negligent or responsible are recommended and wherever

FIG. "A"
Western Railway Weighing Ass'n
Scale Ticket. (Q. M. & P. Co.)
Pat. Pending.

Date Weighed 2-10-9 P. m. Initials AT No. 88983
Car Weighed Chicago
Uncoupled at Chicago

154 400 Gross.
44 900 Tare.
109 500 Net.

Capacity 100

Wet ☒ Raining ☐ Snowing ☐ Sleeting ☐
Date of Tare 1-19-09 Temp. Fills. Gr. Doors Stakes
Refuse. Ice in Tanks Racks. Blocking Damage

Sample
Signature of sworn weighmaster

Hold this ticket for Station Record.

FIG. "B"
Western Railway Weighing Ass'n
Scale Ticket. (Q. M. & P. Co.)
Pat. Pending.

Date Weighed 2-10-9 P. m. Initials AT No. 88983
Car Weighed Chicago
Uncoupled at Chicago

154 400 Gross.
44 900 Tare.
109 500 Net.

Capacity 100

Wet ☒ Raining ☐ Snowing ☐ Sleeting ☐
Date of Tare 1-19-09 Temp. Fills. Gr. Doors Stakes
Refuse. Ice in Tanks Racks. Blocking Damage

Sample
Signature of sworn weighmaster

Hold this ticket for Station Record.

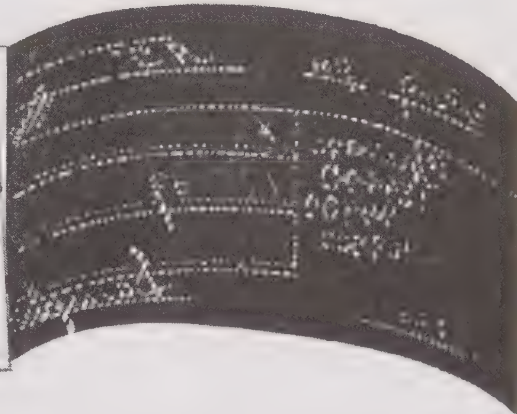


FIG. "C"
INSTRUCTIONS TO WEIGHMASTERS.

Know that the scale is in correct weighing order. Keep scale platform and live scale rails free of hind or obstruction. Keep scale beam, beam notches and poise free of dust, dirt, grease or rust.

Always balance scale beam before weighing. Weigh each car very carefully. Make first record of weight on scale ticket. Print weight on scale ticket with Type Registering Reams only as the car (loaded or empty) is actually on the scale and then only when the scale beam is at proper balance.

Each car must have a full clear bearing on scale and be weighed standing uncoupled and at both ends. Weighmaster must personally see that each car placed on scale is uncoupled and in the clear and not depend on yard or trainmen to do so for him.

As each car comes on the scale to be weighed (and not before), the weighmaster must mark with sharp pointed indelible pencil the "Initials," "Car Number," "Tare," "Date of Tare" and "Capacity."

Weighmaster must mark weather conditions with a cross (X) in space provided. "Dry," "Wet," "Raining," "Snowing," "Sleeting," as the case may be. Show "Date of Tare" by month and year. Show the actual number, or the approximate quantity, of Temporary Train Cops, Stakes, Pickets, Racks, Blocking, Damage, Refuse, Ice in Tanks, and insert nearest practicable estimate of the weight thereof.

In space for "Date Weighed," record date and hour "A. M." or "P. M." of weighing.

Weighmaster must personally weigh each car and sign his own name to scale ticket.

Yardmasters, Engine Foremen, Switchmen, Conductors, or Trainmen, coming to scale with cars to be weighed, must co-operate with weighmaster by placing each car on scale, uncoupled both ends, and giving weighmaster ample time to weigh carefully and accurately record results.

Keep scale tickets in dry place. They must not be wasted.

FIG. "C"
Western Railway Weighing Ass'n
Scale Ticket. (Q. M. & P. Co.)
Pat. Pending.

Date Weighed 2-10-9 P. m. Initials AT No. 88983
Car Weighed Chicago
Uncoupled at Chicago

154 400 Gross.
44 900 Tare.
109 500 Net.

Capacity 100

Wet ☒ Raining ☐ Snowing ☐ Sleeting ☐
Date of Tare 1-19-09 Temp. Fills. Gr. Doors Stakes
Refuse. Ice in Tanks Racks. Blocking Damage

Sample
Signature of sworn weighmaster

Hold this ticket for Station Record.

Manifold Scale Tickets Referred to on Page 234.

applied the evil is quickly abated. The matter should receive attention because cars so damaged are often made empty at points where other bulk freight is reloaded in them, and the new consignor is apt to overlook the defect. A member has written our committee on this subject as follows:

"Where a conveyor type of box car loader is used there is always some danger of damage of equipment. This is more apparent in cars of large capacity, and consequently long length, where it is necessary to run the loader at high speed to get the coal back to the ends. In loaders of the Ottumwa type, damage will result to the roof of the car if it be of low height and the mines try to load the car too full. The remedy is plain in either case cited. No car

should be loaded with more coal than can be placed in it without injury to the car."

Minimum and Maximum Loading of Freight Cars

All views are in accord that no car should be heaped to such extent as to render appreciable the loss of coal from the car in transit. Careful attention by mine superintendents to the proper stowage or trimming of the loads in open cars is urgently recommended. In the effort to get full loading of box and stock car equipment by means of box car loaders, such operation should be watched and limited in a way to get proper loading and at the same time avoid damage to equipment.

It is no hardship upon the mines to load open cars full, but not exceeding 110 per cent of the marked capacity.

Nearly all of the coal tariffs now specify that if a car is loaded full, the actual weight will govern in assessment of freight charges, even though less than the marked capacity.

Importance of Accuracy in the Tare Weights Marked on Freight Cars.

As a matter of course, care must be taken to have reliable weights marked on freight cars, and where there is any doubt on that score the cars should be light weighed, and if necessary, re-marked en route for loading. All railway freight equipment should be light weighed and the tare weights re-marked at least twice a year or oftener to insure correction of any errors developing therein. Errors in the marked tares may occur in several ways: The material in wooden freight equipment may shrink or absorb weight. The prevailing tendency is to shrink. Repairs, retimbering, exchange of trucks or other parts, are productive of changes in the light weights, and sometimes errors are made by weighing or re-stenciling employees.

It is urged that every member of this association bring to bear all of the influence possible to insure proper attention to the revision of the tare weights marked on railway freight equipment.

One of the large western roads expects soon to have installed on its equipment a device that will make it possible for the weighmaster to revise the tare weights while the cars are on the scale, without appreciable detention to the switching crew.

Legitimate Shrinkage allowable on Car Lots.

Much may be said upon this subject; sufficient to state that on coal shipped from dry mines, the actual inherent shrinkage of weight in transit is nominal.

There is bound to be *some* loss of weight between point of shipment and final destination arising from evaporation of any moisture which the coal may contain or from unavoidable waste, imperceptible loss. All concerned should bend every effort toward the elimination, as far as practicable, of differences between point of origin and destination weights.

As a matter of course, coal from a wet mine will show a somewhat greater shrinkage in transit than that which comes from dry mines, provided, the weighing at the mines is performed immediately after the loading is finished.

Washed coal is in a class by itself. If loaded while dripping wet and weighed immediately after the car finishes loading, the shrinkage will be immensely greater than in the case of washed coal that has been in the bins of the washery until drained, or that is not weighed until ten or twelve hours after the loading is completed.

As stated above an extended test is now being made to determine how the weights on washed coal should be determined for invoice and freight charges.

It would be wrong to pass over the subject of shrinkage without alluding to certain circumstances that have contributed largely to the prevailing confusion, to-wit:

- Defective scales.
- Faulty weighing, either at point of shipment, in transit, or at destination.
- Defects in marked tares.
- Failure to properly inspect and prepare cars for loading so as to prevent avoidable leakage in transit.
- Pilferage, before the cars leave the mines, in transit, or after the cars are delivered to consignee at point of unloading.
- Waste between car and wagon scales or failure to empty the car clean where wagon scale weights at destination are matched against mine or in transit track scale weights.
- Weather effect, rain, snow, sleet, etc.

Consignees' Wagon Scale Weights.

This paper has already dealt with the initial weighing at mines or primary weighing stations. The consignee, too often, is misled by errors in weighing, defective scales or confusion of his own weights. His weighing is usually done upon wagon scales located at some distance from the car's side. Owners of wagon scales often neglect them, primarily because of the trouble and expense in securing regular inspection and the services of a competent scale expert. Such scales are usually exposed to the weather, and if neglected the depreciation is rapid. Very few of them are equipped with type registering beams, and to add to the likelihood of error or confusion, many coal dealers shape their loads and weighings to correspond with the orders on hand, adding to, or reducing, the weight of each load as taken from the car while the wagon is on the scale, thus making a continuous haul from the car to the customer; instances are of record where an occasional wagon load has inadvertently reached the customer without being sent to the wagon scale; now and then, the coal is first unloaded from car to bin, and is thence taken to the wagon scale. The consignee frequently occupies from two to four days in unloading a car, no protection being provided by him for the property during the night. The tare weight of the wagon is too often a doubtful factor; also the location of the driver, whether on or off the wagon when weighed light or loaded.

It requires no stretch of the imagination to see that large differences between origin and destination weights are likely to arise under the circumstances just recited.

Inspection and Preparation of Cars for Loading.

Coal operators can almost entirely eliminate the waste of coal account leakage by systematic inspection of all cars just before loading to see that all of the drops of hopper, drop-side, or drop-bottom cars, are amply secured and that no cracks or crevices admitting of leakage are left unprotected.

Pilferage at Mines, in Transit, or at Destination.

Pilferage is a broad and much cursed and discussed feature of the service. If neglected, it will flourish; its abatement can be secured by proper activity on the part of all concerned; namely, operator, carrier and consignee. Protection should begin with the coal operator immediately after the loading is finished and should not end until the coal is safely stowed in consignee's bins. It is the impression of some of our correspondents that the miners have the right of getting their coal without cost to them and the consensus of those directly interested, in various coal districts, seems to be in favor of their getting such coal without cost. But the practice is bound to result in discreditable conditions and annoyances, unless properly regulated. It does not seem improper to recommend that coal companies make the best and safest disposition of it, and that a fair and equitable thing for all concerned would be to undertake to furnish the mines with the coal that they actually need, so there will be no necessity for any pilferage from the cars at the loading point, or suspicion thereof. The railroads should also make it clear to their train and station employees that the coal for cabooses, switch shanties and work trains must be obtained from the company cars, and under no circumstances from commercial loads. Excepting, of course, where in emergency actual confiscation becomes necessary, in which case the rules governing afford full protection to the owners, and all concerned, suitable notation being made on the way-bill.

It would seem that the carrier fulfills its duty when all train and station employees are placed under positive instructions by bulletin and otherwise to afford all possible

protection to coal and other property transported in open cars while in the custody of the railroad company. The influence of coal operators and coal dealers should be combined with that of the carriers toward the rigid enforcement of the laws respecting pilferage.

The coal dealers should co-operate with each other and with the carriers and invoke the aid of the local authorities to secure proper punishment of the culprits.

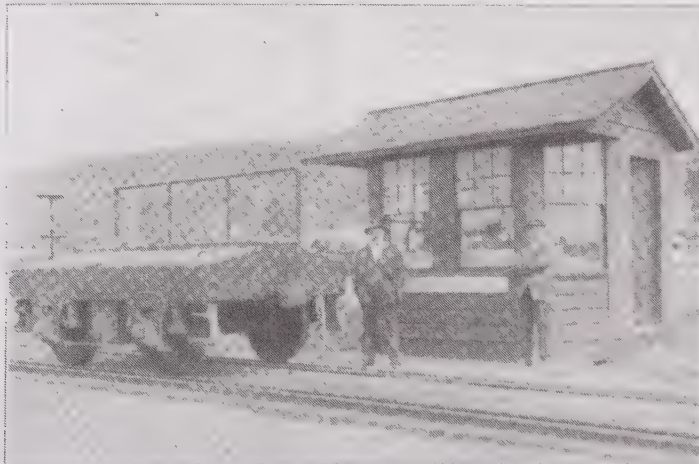
The consignee should afford proper protection for the property during process of unloading and expedite that work as much as possible.

Weather Effect, Rain, Snow, Sleet, Etc.

There are many false impressions regarding the weather effect (rain, snow, sleet, etc.) upon loaded freight cars. It is well to bear in mind that if a full inch of rain should fall upon and be retained by the exposed surface of a 36-ft. car, the weight would be increased less than 1,600 lbs. Drainage usually commences very soon after the rain begins and the evaporation is quite rapid. With few exceptions, the average precipitation is slight in the coal districts concerning which the committee has data. The average rainfall in the Missouri and Mississippi River valleys will not exceed 36 inches per year, or .001 of 1 inch per day. The heavy rainfalls are of limited duration, and as stated the drainage from the cars is rapid and the immediate effect is not great.

Testing Track Scales.

The most suitable device for testing railroad track scales is a testing car built entirely of iron and mounted upon four wheels with short wheel base, its sealed weight being determined by master scale. The car is reweighed in and out and resealed upon each recurring trip. Scale manufacturers, F. O. Becker, Superintendent of the Western Railway Weighing Association, and a number of the leading railroads strongly favor the use of such cars. Their weight is sufficient to develop any slight inaccuracy in any part of the scales under test and they are especially advantageous because the scale inspector can move them on or off the scale without the aid of a switch engine. The efficiency of such cars is incomparably greater than the numerous fifty-pound test weights which would otherwise be used to obtain a like test. A cut of such car is shown on page 14.



Testing Cars Used by the Atchison, Topeka & Santa Fe Railway System to Test and Adjust Its Railroad Track Scales.

The sealed weight of this car is 29,800 pounds. This may be increased to 40,000 pounds if desired. Its performance on ten successive trips will prove interesting. On each of said trips, the car covered a mileage, ranging from

200 to more than 5,000 miles, between weighings. The differences between the car's sealed weights on the car out-bound and its weight returning to the master scale are as follows:

Gains in weight per trip. Losses in weight per trip.

2 lbs. 6 oz.	7 lbs. 13 oz.
4 " 10 "	3 " 3 "
3 " 10 "	8 " 6 "
10 " 10 "	1 " 1. "
	5 " 4 "
	9 " 9 "

Total...21 lbs. 4 oz.

Average discrepancy, 5 lbs. 5 oz.

Total...36 lbs. 8 oz.

Average discrepancy, 6 lbs. 1 1/2 oz.

or an average fault per trip of 5 lbs. 12 1/4 oz., or $\frac{5\frac{1}{4}}{29,800}$

$\frac{19}{100,000}$

BY COMMITTEE,
F. C. MAEGLY, *Chairman*.
CHAS. S. KEITH.
W. J. JENKINS.

THE GOVERNMENT'S BRIQUETTING TESTS.

Investigations undertaken to show the possibility of making satisfactory commercial briquets from low-grade or waste coals, begun at the Louisiana Purchase Exposition in 1904 by the United States Geological Survey, continued in 1907 and 1908 at Norfolk, Va. Two briquetting machines were installed at the Norfolk plant—one of English and one of American make. The briquets made at this plant were tested on locomotives of several railways entering Norfolk and on the United States torpedo boat Biddle, in comparison with the run-of-mine coal used in making them, as described in Bulletin 363 of the Geological Survey; a detailed account of the manufacture of the briquets is now published in Bulletin 385 by C. L. Wright, who had charge of the plant in 1908. His report includes notes on

the binders used, illustrated description of the equipment, details of the physical properties and chemical composition of the briquets made from 16 different coals, and a partial bibliography of recent literature on briquetting.

STANDARD TYPES OF COALING STATIONS

At the present time, when the general managers of all railroads are confronted with the problem of effecting a reduction of operating expenses offsetting the reduction of rates incident to the demand of the public for cheap transportation, it devolves upon the fuel agent, or those directly in charge of fuel handling, to devise methods and plans for the most economical handling of same from cars to locomotives. It can readily be seen that when you take into consideration that 115,000,000 tons of coal are consumed in the United States per year by railroads, a fractional part of a cent per ton saved in handling will mean a large increase in net revenue. This emphasizes the importance of securing properly designed coaling facilities, which in many instances will effect a reduction of several cents per ton in the cost of handling.

There are various methods used in coaling locomotives:

1. Shoveling direct from cars to tender.
2. Shoveling from car to elevated platform and from there to tender.
3. Shoveling from cars, elevated platform or ground storage to half-ton or ton buckets, and elevating to tender by hand windlass power.
4. Shoveling from cars, elevated platform or ground storage to half-ton or ton buckets, and elevating to tender by use of air, steam or electricity.
5. From car or storage direct to tender by use of clam shell.
6. Shoveling from cars to small cars, or buggies, and dumping on tender. This necessitates an elevated platform.
7. Shoveling from cars to chutes. This necessitates an incline and elevated tracks.
8. By using side or center dump cars and dropping coal into elevated bins. This necessitates long incline to enable switch engine to place cars over elevated bin, or short incline with cable and power to pull up cars.
9. By using bucket conveyor or inclined belt, delivering coal direct to coal chutes from depressed pit, or shoveling from cars direct to the belt.
10. By using bucket conveyor or inclined belt and delivering coal into large bins from depressed pit, self-cleaning cars used.
11. By using buckets of from one to three tons capacity, filled at bottom of depressed pit and elevated through guides to large elevated bins, buckets dumped at top automatically, this known as the Holman type.

There are perhaps numerous other devices for coaling locomotives that we are not familiar with, and the committee assigned to this subject feels that to recommend a standard type of coaling plant would be impossible, due to the fact that local conditions have to be considered in order to select the most economical design to meet the requirements. A coaling plant that would be economical for one location would be an expensive one at another point, on account of the difference in the grade and volume of coal to be handled. For this reason we do not feel justified in recommending any particular type of coaling plant. There are several designs of coaling plants which make a good showing in the cost of handling coal from cars to locomotives when the proper equipment is furnished, and the coal can be unloaded economically into the different types of receptacles from which it is elevated into the storage bin. Power plants are installed in preference to shoveling chutes for several reasons; lack of room to put in long incline, demand for greater capacity than the shoveling chutes can provide, and for economy of maintenance. The

mechanical apparatus, if well designed and operated, requires less maintenance expense than the timber structure, which will have to be renewed frequently. Fixed charges are an item that should be considered when a new coaling plant is built, for it would not be an economical proposition to construct a coaling plant where the fixed charges, such as interest and depreciation, would more than pay the labor charges for handling the coal by hand. For purposes of comparison, the cost of handling coal should include interest on the original investment, depreciation, cost of repairs, cost of supplies and labor. In comparing data on a number of coaling stations, it is quite noticeable that where a mechanical coaling plant has been installed and the volume of coal handled is small, the expense of handling the coal through the improved coaling plant equals the expense of shoveling the coal direct from cars to locomotives. If the volume of coal taken at such a point had been greater, there would, no doubt, have been a reduction in the cost per ton of coal handled.

It has been found in some instances where the improved mechanical coaling plants have been installed, that it has not been economical to use self-clearing equipment for supplying these chutes on account of the volume of traffic being in the opposite direction from which the coal was supplied, and in order to prevent cross-hauling of empty cars it was more economical to load company coal into covered cars and shovel it out than to use self-clearing cars. There are two factors that should be considered in connection with the use of box or stock cars when used for coal loading. Mechanical loaders at mines, particularly those of the type having sufficient capacity to take care of from 1,000 to 1,500 tons daily, frequently do great damage to the ends of cars by throwing the lumps up against same with such force as to actually, in some cases, drive the end of the car out. Damage is frequently done to doorways when introducing and removing mechanical loaders. It is a fact also that due to the smaller average capacity of covered cars as compared with regular coal equipment, the percentage of tare to load is much higher in the case of the covered car, this operating against economical movement in direction of both empty and load. There is a further loss incident to the loading of coal in covered cars, viz., that due to the fact coal cannot be inspected and cleaned as well as when it is possible to put slate pickers and inspectors on top of open cars. This suggests that the question of equipment is one deserving of serious consideration and should be entered into carefully by both the fuel department and the superintendent of transportation or car service agent.

As stated before, local conditions entirely govern the type of coaling plant to be operated. Delay to power at terminals and at intermediate coaling stations must be given consideration. With a congested terminal, or a division where there is heavy traffic, it is important to have a large storage capacity, necessitating perhaps a more expensive plant in order to provide for emergencies such as poor switching service in placing coal, supply of coal in yards running short due to wrecks, washouts and failure to secure prompt movement, and repairs to machinery due to breakdowns or renewals. With a large storage capacity it is possible to reduce operating expenses by carrying sufficient coal in storage bins to avoid employing a night coal chute crew. A reduction of 50 per cent in hostler forces has been made in numerous instances by being able to deliver the coal to engines promptly and for this reason the

location of chutes is a very important matter. They should be located so as to coal engines, preferably as they go out, enabling the engine tender to go into the house empty. In this way flues can be bored to better advantage and repairs made to tender, coal gates, etc. Storage bins should be so constructed as to clean themselves, preventing the accumulation of old coal, and avoiding fire from spontaneous combustion. Where these items of economy have been taken into consideration, the extra expense incurred by installing a plant with ample storage capacity will be many times compensated for.

A mechanical or gravity plant has an advantage over a shoveling coaling station in the employment of labor, inasmuch as it does not require more than two or three men to operate it and in the event of scarcity of labor or demand for increased wages, the increased cost per ton would not be as great as at shoveling stations. In considering the installation of mechanical or gravity plants, due care must be given to the proper car equipment for the successful and economical operation of the same. It has been demon-

strated that in operating trestle gravity plants a side dump is preferable, while with power plants, center and side dumps will give equal results. However, in using certain grades of coal it may be necessary to deviate from the above rule, for example, coal containing large lumps can be more successfully handled in side dump cars, this being especially true when breaker bars are used. Again, some grades of coal do not clear themselves as well in center dump cars as in side dumps and in selecting equipment, consideration should be given to the quality of coal to be used. Another very important feature in the construction of a new coaling plant is to provide some mechanical device to handle scrap coal from under chutes by either carrying it on top, to be re-issued to locomotives, or loading it into cars for shipment to stationary plants. Mechanical or gravity coaling plants cannot be as economically operated when breaker bars have to be used and when a new installation of either conveyor or Holman type is being considered, some arrangement should be made to equip the plant with a mechanical breaker to reduce the cost of handling to a mini-

mum and also prepare the coal for economical consumption. Passing the coal through breaker bars by hand increases the cost of operation from two to three cents per ton and rarely is the coal broken to the proper size. In the cost of handling coal in these various chutes, no consideration has been given the depreciation in the value of the coal on account of increasing the amount of slack due to more frequent handling. Coal handled from cars to locomotives through a mechanical coaling plant will be handled at least twice as many times as it would if it was shoveled from cars into coal chute pockets or handled through inclined trestle gravity chutes. There is no question but that the percentage of slack caused by this extra handling of some coals is very noticeably increased. This naturally depreciates the value of the coal when delivered to the engine and the mechanical coaling plant should be charged with this. When the quality of the coal is taken into account there is a question as to whether or not, from a fuel economy standpoint, it would be advantageous to use anything but the old style trestle where coal is shoveled into pockets.

Cost of Installation	Interest on Plant	Depreciation on Plant	Maintenance	Supplies	Labor	Total Cost	Tons Handled	Average Cost per Ton
Type One 25 Chutes	Shoveling chutes, inclined, trestle served by locomotives; Chutes located in Mo., Texas, Ala., Miss., Minn., Ia., Mea., Ohio, Ark., Ind., Ky., Tenn., on lines of M. & T., Frisco, Rock Island, C. & E., Penna. RR. and Queen & Crescent System							
\$186,846.32	\$68,232	\$67,025	\$16,332	\$22,558	\$9,554.93	\$351,538	71,755	1062
Type Two 14 Chutes	Gravity chutes, timber construction, using self-clearing cars. Served by locomotives, and gasoline or electric cable hoist. Chutes located in Ky., Texas, Ohio, Mo., Miss., Ala., Ark., Ill., Iowa, on lines of M. & T., Rock Island, Frisco, and C. & E. RR.							
\$150,554.12	\$52,771	\$50,461	\$16,284	\$27,224.16	\$36,837.92	\$303,328	61,001	1060
Type Three 9 Chutes	Holman type using one to four balanced buckets with capacity of one ton in each. Chutes located in Ill., Ia., Mo., Ark., Ohio and Pa. on M. & T., Frisco, Rock Island, Penna. RR. and C. & E. RR.							
\$91,774.45	\$35,886	\$35,886	\$21,143	\$1,352.22	\$12,842	\$155,631	11,103	1062
Type Four 8 Chutes	Trestle Platform - one ton or more capacity buggies. Gondola and covered cars placed by locomotives. Chutes located in Ky., Tenn., and Ala. on Queen & Crescent System.							
\$94,000.00	\$47,000	\$47,000	\$20,000	\$29,160	\$1,896.48	\$230,256	20,622	1050
Type Five 6 Chutes	Air Hoist - Crane and Buckets - Air Pressure furnished by locomotive taking coal. Located in Texas, Ky., Ia., Minn., and Ind. on lines of Penna. RR., M. & T., and Rock Island.							
\$46,864.42	\$23,432	\$23,432	\$39,771	\$7,860	\$2,616.15	\$60,716	55,505	1795
Type Six 7 Chutes	Bucket Conveyor Type. Using Gasoline, Steam and Electric Power. Self-clearing cars employed. Located in Ia., Ky., Ind., Mo., Ohio and Tenn. on lines of M. & T., Penna. RR. and Rock Island.							
\$114,554.99	\$57,276	\$57,276	\$62,641	\$50,299	\$17,359.11	\$373,771	68,999	1054
Type Seven 4 Chutes	Inclined conveyor, Rubber or Canvas Belt. Gasoline, Electric and Steam Power. Self-clearing cars used.							
\$66,840.06	\$33,420	\$33,420	\$20,400	\$10,776	\$10,770.40	\$158,416	26,726	1076
Type Eight 4 Stations	Locomotive Crane and Clam Shell. Gondola cars used. Located in Ill., Mo., Ohio, and Tenn. on lines of Frisco and Q. & C. System.							
\$305,000.00	\$152,500	\$152,500	\$40,000	\$20,800	\$2,903.20	\$550,132	350,972	1067

strated that in operating trestle gravity plants a side dump is preferable, while with power plants, center and side dumps will give equal results. However, in using certain grades of coal it may be necessary to deviate from the above rule, for example, coal containing large lumps can be more successfully handled in side dump cars, this being especially true when breaker bars are used. Again, some grades of coal do not clear themselves as well in center dump cars as in side dumps and in selecting equipment, consideration should be given to the quality of coal to be used. Another very important feature in the construction of a new coaling plant is to provide some mechanical device to handle scrap coal from under chutes by either carrying it on top, to be re-issued to locomotives, or loading it into cars for shipment to stationary plants. Mechanical or gravity coaling plants cannot be as economically operated when breaker bars have to be used and when a new installation of either conveyor or Holman type is being considered, some arrangement should be made to equip the plant with a mechanical breaker to reduce the cost of handling to a mini-

Your committee has attempted to secure some figures showing the comparative cost of operating different types of coaling stations. The statements submitted herewith, including several examples of eight different types, located on various roads in different parts of the United States, suggesting variable climatic conditions and labor cost, will, we believe, prove of interest. In order to secure a more representative comparison, the average of a number of stations of the same type is given rather than items showing individual station figures, the results covering a twelve months' period. It is proper to say that the figures submitted do not include the items of general supervision, insurance, taxes or charge for locomotive service in placing cars for unloading.

By COMMITTEE,

J. H. HIRSHEN, Chairman,
S. L. YERKES,
C. F. RICHARDSON

Going to advertise? Do it now.

THE COUNTY MINE INSPECTOR'S COMPENSATION

The following opinion rendered by Attorney General Stead, addressed, under date of June 22, to David Ross, secretary of the Commissioners of Labor, Springfield, Ill., is of much interest:

Under date of the 21st inst. you inform me that the County Board of Fulton County has by resolution provided for a county mine inspector, fixing his compensation at \$4 per day and limiting the number of days in each year at less than the whole for which such compensation may be drawn. You submit the question whether, if the state mine inspector should order the county mine inspector on duty to assist him when the county mine inspector has already performed the number of days' service, to which pay is limited by the Board of Supervisors, would the county mine inspector thereupon be entitled to the per diem compensation from the county for such days' service, over and in addition to the time limited by the county board?

In reply will say that I have already rendered it as my opinion that the county board is not authorized by the statute to instruct the county mine inspector, appointed by them, with reference to the performance of his duties.

See Attorney General's report, 1907-8, page 554.

The statute in question is quoted there and need not be repeated here as it remains the same. Since the county board is then not at liberty generally to instruct the county mine inspector, I am of the opinion it cannot instruct him as to the period of time within which his duties must be performed and is not at liberty to say that if his duties require him to perform service at any other time, that the county will not pay the compensation therefor. The statute gives the county board no such authority and, in my opinion, there are sufficient and cogent reasons why no such power can be supplied by implication.

The county mine inspector is the vice-principal of the proper district by the operator interested: state mine inspector and is subject to his orders in the performance of duties incident to the office of the state mine inspector. See Attorney General's report, 1907-8, page 552.

The bond of the state mine inspector is the obligation of the county mine inspector. See section 15, chapter 93, Hurd's Revised Statutes, 1908.

The county mine inspector may be called upon in cases of emergency to act in place of his principal under any of the contingencies mentioned in sections 26 and 27, chapter 93, which are as follows:

"Immediate notice must be conveyed to the inspector of

"1. Whenever an accident occurs whereby any person receives serious or fatal injury.

"2. Whenever it is intended to sink a shaft, either for hoisting or escapement purposes, or to open a new mine by any process.

"3. Whenever it is intended to abandon any mine or to reopen any abandoned mine.

"4. Upon the appearance of any large body of fire-clamp in any mine, whether accompanied by explosion or not, and upon the occurrence of any serious fire within the mine or on the surface.

"5. When the workings of any mine are approaching dangerously near any abandoned mine, believed to contain accumulations of water or of gas.

"6. Upon the accidental closing or intended abandonment of any passageway to an escapement outlet.

"Whenever loss of life or serious personal injury shall occur by reason of any explosion, or of any accident what-

soever, in or connected with any coal mine, it shall be the duty of the person having charge of said mine to report that fact, without delay, to the inspector of the district in which the mine is located, and the said inspector shall, if he deem necessary from the facts reported, and in all cases of loss of life, immediately go to the scene of said accident and render every possible assistance to those in need.

"It shall moreover be the duty of every operator of a coal mine to make and preserve for the information of the inspector, and upon uniform blanks furnished by said inspector, a record of all injuries sustained by any of his employees in the pursuance of their regular occupations.

"If any person is killed by any explosion or other accident, the operator must also notify the coroner of the county, or in his absence or inability to act, any justice of the peace of said county, for the purpose of holding an inquest concerning the cause of such death. At such inquest the inspector shall offer such testimony as he may be possessed of, and may question or cross-question any witness appearing in the case.

"The inspector may also make any original or supplemental investigation which he may deem necessary, as to the nature and cause of any accident within his jurisdiction, and shall make a record of the circumstances attending the same, and of the result of his investigations, for preservation in the files of his office. To enable him to make such investigation he shall have the power to compel the attendance of witnesses and to administer oaths or affirmations to them, and the cost of such investigations shall be paid by the county in which such accident has occurred in the same manner as the costs of coroner's inquests are paid."

If then it is delegated to the county board to say that the county will pay for only one hundred or fifty or ten days' service of the county mine inspector, a serious obstacle to the proper enforcement of the statutes might be interposed.

The object contemplated by the statute is to have some one always ready to perform these services in the absence of the state mine inspector. To permit the county board to interfere with that object to any extent is, I think, a step towards the defeat of the plain intent of the statute.

In my opinion, the county board has no voice in saying how many days' service that officer shall perform, but must fix his compensation and must pay him for every day's service necessarily performed. Very respectfully,

W. H. STEAD, Attorney General.

COPELIN GETS VERDICT.

The breach of contract suit for \$5,000 damages brought by I. W. Copelin, a Toledo, O., coal man, against the Laughman Coal Company, of Altoona, Pa., resulted in a verdict of \$4,180 for the plaintiff, less a bill and costs, leaving \$2,444.80 net. Copelin had a contract with the defendant to supply coal at a stipulated price, but during the coal strike of 1902, when prices soared and all coal men were reaping the harvest of dollars for spot coal, shipments ceased. The defense was that Copelin refused to pay a bill of \$1,200 and had no contract.

A large coal field near Barrackville has been taken over by E. J. Berwin, the coal magnate of Philadelphia, and the Jamison Coal Company of Pittsburgh. There are 6,800 acres in the field and the price per acre is said to be \$250.

THE PHYSICAL ACTION OF MINE AIR AS A FACTOR IN DUST EXPLOSIONS

State Mine Inspector John Verner, of Chariton, Iowa, made an address before the Fuel Conference at Ames, Iowa, which was so highly commended that he was requested to prepare a paper on the same topic for the meeting of the Mine Inspectors' Institute of America at Scranton, Pa., and reduced his experiences to writing for the latter meeting. It was warmly commended and much discussed. Mr. Verner has investigated dust explosions and their causes for twenty years past, and has arrived at the conclusion that the prevention of these explosions must be prevented through the proper use of explosives, through the use of proper explosives, through the prevention of the initial flame caused by other means than explosives, and through the auxiliary remedy suggested in his paper. It is a valuable contribution to the present-day investigations and will certainly be read with interest by all to whom it shall come. The paper is printed in full below.

Three factors enter into the development of a dust explosion: The initial flame (no matter how caused), coal dust (more properly expressed the gaseous matter contained in the dust and coal), and air.

The Initial Flame as a Factor.

The value and importance of the factor of initial flame are easily fixed. Without it there would be no explosion, and its presence is absolutely necessary to start one. Air is likewise a necessary factor, for in its absence the existence of flame and combustion would be impossible. The presence of coal dust is considered by many the most essential and the most influential factor of the three. The term "dust explosion" emphasizes this view and appearances seem to favor its correctness, but it is not well, especially in an investigation of this kind, to trust too much in appearance, for there is always the possibility that such trust may not be warranted when the facts in the case are subjected to a critical examination. By the process of combination and elimination it can be shown that the presence of dust is of far less importance than is generally supposed, and certainly greatly inferior to the influence of the presence of pure air. The combination of flame and coal dust, without sufficient air to promote combination of air has little power to do harm, the combination of air and dust in the absence of flame presents no element of danger, but it is a demonstrable fact that the proper combination of air and the initial flame, even in the entire absence of CH_4 and with the mine as free from coal dust as man can make it, can produce an explosion of considerable extent. The presence of coal dust is a very material factor in the extension of an explosion under way and in increasing its force, but the admission of this fact is by no means a bar to the claim that the dust's influence in starting an explosion is greatly overrated.

Coal Dust Not a Prime Factor.

I made the statement in a former article on "explosions in non-gaseous mines" that "I am of the opinion, paradoxical as it may appear, that coal dust should not be considered the prime factor in a dust explosion." Mr. Haas, in his excellent article on "Coal Dust," corroborates this view and puts the case still more strongly by saying: "In fact the absolute preventive for a dust explosion is to prevent an initial explosion from some other source, for under no circumstances can dust be considered dangerous." The

latter part of the statement may appear to some as startling and unwarranted, in fact, instances have been cited, alleged to prove Mr. Haas' position untenable, but these instances have not weakened his position, for in the cases cited the dust, at best, was only a passive factor.

To designate coal dust in connection with explosions as the passive factor is appropriate, for the application of the term aptly fixes the measure of the dust's influence and importance. It is therefore illogical and a hindrance to the early achievement of satisfactory results to make such strenuous efforts to prevent the danger of an explosion by the manipulation of the dust, the inferior factor, instead of directing these efforts towards devising means for the elimination or control of the factor or factors that transform the passive body into an active agency of force and destruction.

Air Is a Prime Factor.

It has been stated that air is a prime factor in the development of an explosion and that being true, it naturally follows that air as a promoter of explosions must be considered a possible dangerous element in a mine. Efficient mine ventilation, however, is a necessity and the efforts made to provide it, especially in recent years, and to secure the movement of large volumes of pure air through the working places, are highly commendable and should be continued, but the recognized beneficent results obtained should not be permitted to influence our judgment as to the existence of possible detrimental features. It should be understood that efficient and ample mine ventilation contains two elements of danger, one is that it furnishes the ready supply of oxygen necessary to sustain and enlarge the initial flame, the other, more to be feared than the first, that it tends to promote a false sense of security and a consequent decrease in watchfulness, that has so often proved a fatal mistake. Even a comparatively small flame may be developed to extremely dangerous proportions through the influence of a strong current of pure air, and it is inviting disaster to ignore this fact.

Just why the air factor in a dust explosion has received so far but little attention is hard to account for, except by the theory that the matter of the presence of air seemed such a simple proposition, that its apparent simplicity made any attempt to investigate the matter further appeared unprofitable and useless. Its presence was taken as a matter of course and only its chemical action was considered of consequence, and there was no inquiry as to the possible influence of its physical action, its availability and the manner of its supply at the explosion's starting point and during its extension.

No Dust Explosions in Summer.

A very large number of dust explosions have occurred in non-gaseous mines in the United States in the past, yet the most diligent search has failed to show any authentic record that even one of this great number ever occurred in the summer time. The explosion record of Iowa, covering the last twenty years, shows that all the explosions in that state during that time occurred from October to March, the earliest on October 22, the latest on March 11, and more than half of them (ten) during the months of January and February. How is the fact to be accounted for that dust explosions in non-gaseous mines are of most frequent occurrence in the months of December, January and February,

and why have these mines been absolutely free from them during the months of June, July and August? There must be some potent influence at work that favors their development in the winter and prevents it effectively in the summer and therefore it is more probable that the discovery of the source of this influence will furnish the right understanding of all the factors contributing to the development of a dust explosion. The initial flame cannot be responsible for this influence, for blown out shots are of about equal frequency in all seasons of the year, and there is no reason for assuming that the initial flame by itself, develops a greater amount of heat in the winter than in the summer. As the coal dust is almost impervious to water, as it is the gaseous matter contained in the dust, rather than the dust body that counts in an explosion and as, in many cases, the presence of even considerable moisture has failed to prevent explosions, it appears that the state of the dust with regard to dryness or dampness cannot produce this powerful influence for or against an explosion. As this seemingly leaves the air as the source of this influence it becomes a matter of great importance that investigations be made in this direction to discover if there are any good reasons and proofs to establish the correctness of this conclusion.

The laws governing combustion have equal application in all cases and in all places where material is burned. To promote the most rapid combustion of the coal on the blacksmith's forge and to create the most intense heat in the shortest space of time, the air must be forced into the fire from below. Again, under this method of air admission, and only under this method, have small explosions been produced on the forge, if the quick escape of the air and the volatile matter of the coal was prevented by covering the fire by a layer of fine coal or in some other manner, until the air and gas could combine in proper proportions to form an explosive mixture.

Thousands of little explosions have occurred in heating stoves and furnaces, but only when there was a free admission of air below the fire and the gases formed. Professor Peckham found it necessary in his attempts to produce explosions to use the bellows to drive the air and dust into the flame. He also showed by a simple experiment the necessity of air and dust admission below the flame. "A common kerosene lantern, when surrounded by dust of all degrees of density would not produce an explosion, but when the dust was blown into the bottom through the globe and out of the top it would ignite." In all these instances the physical action of the air in a well defined movement towards, under and into the flame preceded its chemical action, and in all these cases the existence and influence of this physical action was really the determining factor in the development of the explosions. Now, if the air movement towards, under and into the flame and heated gases is essential on the surface to create an explosion, it must be essential to produce one in a mine, unless we can show the existence of a special code of natural laws, applicable only to mine explosions.

Temperature of the Air Flow.

Aware of the fact that temperature had considerable influence in increasing or decreasing the air volume going through the mine and believing that only through the full investigation of the air factor could any additional information as to the causes of dust explosions be secured, I concluded to determine, if possible, in just what manner temperature affected the air flow in mines, and the probable results due to the physical action of the air in connection with explosions. The experiments were all made in the same mine and they were carried on for a period of about 14 months. On an entry, practically level, 5 feet high between the rail and the cross bars, a suitable place, about $\frac{3}{4}$ mile distant from the bottom of the downcast was se-

lected, and the air flow was carefully measured with the anemometer at this point at frequent intervals and at all seasons of the year. The anemometer was moved upward and downward in a vertical line and the readings were taken at short distances apart. While the readings were being taken, the state of temperature at the intake and at the observation point was carefully noted. The following are the results of three typical observations:

No. 1.

Outside temperature	.... 9 degrees
Inside temperature	.....40 degrees
Air velocity, near top	.....200 feet per min.
" " 6 inches from the top	....230 " " "
" " 1 foot from the top	.....300 " " "
" " at center	.....400 " " "
" " 1 foot from the bottom	....400 " " "
" " 6 inches from the bottom	....400 " " "

No. 2.

Outside temperature	....88 degrees
Inside temperature	.....58 degrees
Air velocity, 6 inches from the top	....178 feet per min.
" " 18 inches from the top	....178 " " "
" " 2 feet from the bottom	....140 " " "
" " 1 foot from the bottom	....120 " " "
" " near bottom	..... 73 " " "

No. 3.

Temperature at bottom of air shaft	....47 degrees
Temperature at observation point	....49 degrees
Air velocity, 6 inches from the top	....160 feet per min.
" " 1 foot from the top	....200 " " "
" " 2 feet from the top	....230 " " "
" " at center	.....250 " " "
" " 2 feet from the bottom	....230 " " "
" " 1 foot from the bottom	....210 " " "
" " 6 inches from the bottom	....180 " " "

A Study of Air Velocity.

It will be noticed that in observation 1 (taken in the winter) the air velocity at and below the horizontal center line of the entry and down to points near the bottom was about twice as great as the velocity near the top. In observation 2 (taken in August) it is shown that the air velocity above the center line of the entry was very much in excess of the velocity found below the line. In observation 3 we find that, if the temperatures at the intake and at the measuring point are the same, the air flow's velocity is greatest in the center of the entry, diminishing in almost equal proportion towards the top and bottom.

The tendency of an explosive force is to work along the lines of least resistance. Supposing then that shot should blow the tamping in the presence of an air movement and under the conditions as shown in observation 1, we find that the shot's force is opposed by a four times greater resistance below the horizontal line of the entry than above it, with the result that this force would be deflected largely into and along the upper part of the entry. The air near the bottom, now under pressure by the force above (representing the action of the blower on the blacksmith's forge and the bellows used by Professor Peckham), and attracted by the heat of the succeeding flame, would naturally rush forward under and into the flaming gases, carrying with it any available fuel in its path.

A Vacuum Aids Explosive Force.

Besides the pressure and the heat attraction there is yet another influence that may contribute to the inrush of air along the mine floor. Nearly all dust explosions started at the working face and most of them in entries some distance in advance of the last crosscut or in new rooms not yet connected with adjoining place by break throughs. Un-

der the conditions existing in observations 1, aided by the effects of the burning of lights, etc., at the face, these entries and rooms (especially if dipping), were probably very effectively ventilated by a strong inflow of air along the bottom, the heated air returning from the face along the roof. The easy and rapid escape of the heat and flame from a blown out shot along the roof in places of this kind undoubtedly created a vacuum near the face into which the dust laden air along the floor rushed with terrific speed. The influence of such vacuum and its effects in the Minneapolis Mills explosion, are shown by Professor Peckham in the following statement: "The outward impulse was produced by the expansion of the hot gases formed first by loose dust in the mill, but as these rose in the air, tending to form a vacuum below, the air from all directions rushed in, acting upon the flour, middlings, etc., that was in bulk, as the bellows in the experiments given, throwing it in all directions and adding to the power of the explosion."

Is High Outside Temperature a Preventive?

It may be said that the Altofts experiments were made in mid-summer, that violent explosions were readily produced, and that consequently the claim that high outside temperature has a preventive effect on explosions is not sound. It is true that most violent explosions were produced at Altofts during the months of June, July and August, but in this connection the fact should be taken into consideration that special and careful preparation was made for their production, that the air velocity was twenty feet per second, and that a steel tube and its equipments, located above ground, cannot correctly represent all the features of a coal mine. What is more important, however, is the fact that most of the Altofts explosions were produced under conditions similar to those found in observation 1, for in several instances the temperature in the tube was 14 degrees higher than the temperature outside. In only one case was the inside temperature lower, and then only by one degree, and the record shows that the explosion produced under this condition was one of the least violent.

In a previous article on dust explosions I expressed the belief that the effects of great force often noticed in the direction opposite to the course taken by the explosion were due to the inrush of air along the mine floor and the results obtained in the Altofts experiments strongly support this view.

Experiment No. 13. Outside temperature 56 degrees, inside temperature 56 degrees. Violent explosion. All timber sets were between the cannon's location and the downcast. All the 57 sets of timber blown down and some 23 sets swept toward downcast and collected there. Ten props were carried 30 feet inwards toward the return; 43 feet of concrete floor in main intake badly broken up.

Experiment No. 16. Outside temperature 77 degrees, inside temperature 91 degrees. Violent explosion. Seven props drawn 15 feet backwards. Large slab of concrete originally forming floor 177 feet behind large cannon, carried 30 feet forward (toward cannon), also 3 feet of concrete floor at this point badly broken up.

Experiment No. 18. Outside temperature 74 degrees, inside temperature 88 degrees. Violent explosion. Eight props drawn backwards over a distance of 25 feet at return end. Six feet of concrete floor and rails torn up at return end. Broken stay of valve 9 drawn backwards into main return 21 feet.

Experiment No. 23. Outside temperature 65 degrees, inside temperature 68 degrees. Violent explosion. Twenty props carried backwards behind cannon over a distance of 60 feet. It is a fact, worthy of note, that in all the experiments made at Altofts, the breaking up of the concrete floor and tearing up of rails only occurred in those cases where

the location of the displaced timbers showed the simultaneous existence of forces moving in opposite directions.

When a Blown-Out Shot Occurs.

Should a blown-out shot occur under the conditions prevailing in observation 2, the greatest resistance to the shot's force would be in the upper part of the entry and the least resistance near the floor. Consequently the force would be deflected downward, it would drive the air and dust along the bottom away from the initial flame with the result that the latter would quickly die out for the want of air and fuel to sustain it. Under such conditions a dust explosion seems impossible, and none has ever occurred so far as known.

Under the conditions noted in observation 3, the force from a blown-out shot is about equally distributed, in what may be termed cup shape, over the entire area of the entry, exerting its power on the air ahead somewhat like a piston in good working order. In this case the air and dust are again prevented from reaching the flame in time to do harm, but it is probable that the effect of the forcing back of all the air in the entry in a compact body may produce what is commonly known as the windy shot.

Those who believe that dust is the prime factor in a "dust explosion" naturally support the claim that the drier the dust the greater the probability of an explosion and consequently their efforts of prevention have been directed mainly towards providing artificial means for humidifying mines. As dust explosions did not occur in the summer, when the state of natural mine humidity was best developed, and were most frequent in the coldest months of the year, when the mines and the dust in them were in the driest state, they concluded that the artificial application of moisture in the mines would be a reliable preventive. Unfortunately, however, the claims made for the effectiveness of spraying and sprinkling devices have not been sustained by the facts. A large number of instances could be cited but only two will be given, to show that moisture alone, carried either naturally in the air or artificially applied, did not prevent dust explosions.

Experiment No. 21 was made at Altofts on a wet day. The cannon was located less than 350 feet from the intake opening. The air velocity was 21½ feet per second. The hygrometer at the intake showed, dry bulb 57½, wet bulb 57½ degrees, yet with air entering the tube in a perfect state of saturation, there was not only an explosion in the tube, but a double explosion at the downcast end, and there was no visible evidence that the presence of thoroughly humidified air check its violence even in the slightest degree. After investigating the recent West Stanley explosion in England, the jury found "That it was a coal dust explosion. What was the cause of the ignition we are unable to find." There was no gas, there was no evidence of a shot having been fired and, according to the report, "every precaution was used in watering the seams." The presence of moisture was no preventive in this case. The explosion occurred on February 16th.

The Dampening of Roadways.

Such statements as that of Mr. Pamey: "Roadways should be systematically watered so as to damp the dust, and thus render it harmless," and that of Mr. Hughes: "It may now be regarded as established that small amounts of moisture are sufficient to prevent the possibility of coal dust being ignited," are not warranted to say the least. Under ordinary conditions the moistening of the dust may prevent its rising into the air, but ordinary conditions do not prevail in an explosion. I submit that the force that could tear up the concrete floor at Altofts and carry a large slab of it 30 feet towards the explosion's starting point and the force that did dig up the wet fire clay and throw it against the

roof and coal in such manner as to give that part of the mine, where this occurred, the appearance of being white-washed in spots, can surely elevate and separate from each other the damp particles of coal dust and hold them in suspension for the flames to reach them and extract and ignite the gases they contain.

I do not say that artificial humidifiers may not be of advantage, if used under proper conditions, but any attempt to prevent explosions by the use of spraying and sprinkling devices alone, irrespective of other conditions that may be necessary to exist, can only result in absolute failure. It is possible for man to produce flowers in mid-winter, but should he attempt to grow them by only providing the moisture necessary for their development and leave them exposed to a freezing temperature, his efforts will be futile. Likewise the supporters of artificial humidification are powerless to prevent explosions by the simple application of moisture, with the outside temperature considerably lower than that of the mine, because warmth is required in the intake air and they cannot hope to get the results nature produces and disregard any of nature's requirements in the case.

Prevention the True Remedy.

It seems a useless waste of energy and money to attempt to provide means intended to stop or check an explosion under way and any effort in this direction will have about the same effect as trying to hinder a cyclone's progress. The first and foremost effective remedy for dust explosions is to prevent the presence of the initial flame or to render it harmless right at its starting point and every possible effort should be made to accomplish this. As man nearly always creates the danger in the first place, he must necessarily become the main factor in its prevention, but he can make his efforts all the more effective, if he will use nature's assistance to help him succeed. Noting the persistent absence of dust explosions under conditions shown in observation 2, and their rare occurrence under conditions given in observation 3, it appears that the most reliable auxiliary preventive of coal dust explosions can be obtained through the control of the physical action of the air in its travel through the mine. It appears further that this control can be accomplished by the adjustment of the temperature of the air as it enters the mine. By raising the air's temperature at the intake so it equals the mine's natural temperature reasonable safety may be secured, and the safety will be proportionately increased as the intake temperature is raised above that of the mine.

I suggest that during the colder months of the year the air be passed through or along steam coils located in the downcast and over a basin, several feet in depth, commencing at the foot of the downcast, extending for any desired distance along the intake airway and filled with water to be heated by steam coils to any degree of temperature desired up to the boiling point. Such heating plant would not only raise rapidly the temperature of the ingoing air, but it would do more effective and reliable work as a humidifier than any system of sprays and sprinklers so far proposed. Perhaps there will be difficulties in placing air heating plants in mines ventilated by exhaust fans, but there is no good reason why in most of these mines the ventilating method cannot be changed and force fans be used with perfect safety and very satisfactory results. The apparatus can be provided at low cost, and the expense for its maintenance will be comparatively insignificant, its greatest advantage lies in its simplicity, compactness and ease of control and supervision, and I have the utmost faith that through its use and by the right efforts to prevent the initial flame the final reliable and practicable remedy for dust explosions can be secured.

Bunsen Coal Co., Chicago, Ill.; capital, \$10,000.

NEW ENTERPRISES

Atlantic Coal Co., Greensburg, Pa.; capital increased to \$75,000.

Alma Coal Co., Huntington, W. Va.; capital, \$100,000. Incorporators—Donald Clark and others.

Hocking Domestic Coal Co., Murray City, O.; capital, \$10,000. Incorporators—C. E. Campbell and others.

Dillard Coal Co., Dillard, Mo.; capital, \$25,000. Incorporators—W. J. Bates, M. R. Schooler, W. J. Johnson.

Eastern Coal Co., Boston, Mass.; capital, \$75,000. President and clerk, C. I. Albie; treasurer, Geo. I. Wilson.

Gund, Graham Co., Freeport, Ill.; capital, \$15,000. Incorporators—J. A. Gund, G. W. Graham, F. M. Gund.

Walsenburg Fuel Co., Rockland, Me.; capital, \$250,000. President, W. O. Fuller; treasurer, F. W. Wight.

Good Luck Mining Co., Lincolnville, Okla.; capital, \$100,000. Directors—D. Dill, J. I. Huber, L. D. White.

Vibbard Coal Co., Vibbard, Mo.; capital, \$25,000. Incorporators—W. J. Bates, M. R. Schooler, W. J. Johnson.

Lincoln Supply Co., Chicago, Ill.; capital, \$20,000. Incorporators—Geo. Reinberg, A. C. Schildgen, J. H. Fitch.

ILLINOIS MINE INSPECTION DISTRICTS.

The following apportionment of mine inspection districts in Illinois has been made, effective July 1. They show the counties, number of mines, men and tons produced:

1st District—State mine inspector, Hector McAllister, Streator, Ill. Counties—Grundy, Kankakee, La Salle, Putnam and Will; 65 mines; 7,524 men employed; 3,383,364 tons of output.

2d District—State mine inspector, Thomas Hudson, Galva, Illinois. Counties—Bureau, Fulton, Henry, Knox, Mercer, Rock Island, Warren; 216 mines; 9,168 men employed; 4,515,424 tons of output.

3d District—State mine inspector, John Dunlop, Peoria, Illinois. Counties—Hancock, Livingston, Logan, McDonough, McLean, Marshall, Peoria, Schuyler, Stark, Tazewell, Woodford; mines, 179; men employed, 5,151; 2,792,586 tons of output.

4th District—State mine inspector, Thomas Weeks, Bloomington, Ill. Counties—Brown, Cass, Menard, Morgan, Sangamon, Scott; 68 mines; 7,336 men employed; 5,502,104 tons of output.

5th District—State mine inspector, Thomas Moses, Westville, Illinois. Counties—Christian, Edgar, Macon, Moultrie, Shelby, Vermilion; 65 mines; 6,556 men employed; 4,493,781 tons of output.

6th District—State mine inspector, James Taylor, Peoria, Illinois. Counties—Calhoun, Green, Jersey, Macoupin, Montgomery; 43 mines; 6,753 men employed; 5,625,204 tons of output.

7th District—State Mine Inspector, W. W. Williams, Litchfield, Ill. Counties—Bond, Clinton, Madison, Washington, Marion; 49 mines; 7,077 men employed; 5,870,767 tons of output.

8th District—State mine inspector, Walton Rutledge, Alton, Illinois. Counties—Randolph, St. Clair; 92 mines; 6,027 men employed; 5,190,966 tons of output.

9th District—State mine inspector, W. S. Burris, DuQuoin, Illinois. Counties—Franklin, Gallatin, Jefferson, Perry, Saline, Wabash, White; 73 mines; 7,747 men employed; 5,891,130 tons of output.

10th District—State mine inspector, Thomas Little, Murphysboro, Ill. Counties—Jackson, Johnson, Williamson; 72 mines; 7,502 men employed; 6,007,126 tons of output.

THE RETAIL ASSOCIATION.

(Continued from page 240.)

which was read by Mr. Landrum in the absence of the author, in which the topic "Pay as you go" was treated from the standpoint of the retailer, the jobber and the consumer. Like all Mr. Tuttle's addresses it was full of good thought and sensible suggestion.

The annual address of the retiring president, J. W. Landrum, dealt with the growth of the association, the utility of taking and reading the coal trade journals, and the benefit to be derived from intelligent organization.

The pleasant features connected with the trip were many, and at the various landing places the dealers' party took in all the attractions as far as the time allowed. Sault Ste. Marie was a point of special interest to all.

The officers elected for the coming year were as follows: President, George T. Calvert, Detroit, Mich.; vice-president, H. H. Deam, Bluffton, Ind.; the secretary was not elected, Secretary Harris declining re-election and the place being left to the directors to supply. The directors elected were A. B. Meyer, of Indianapolis, Ind., and E. A. Remer, of Cedar Springs, Mich.

One of the interesting talks of the meeting was the eloquent tribute to the memory of D. M. Baker, the veteran coal man who died last February. This was spoken by Robert Lake, former president of the association.

OHIO COAL DEALERS HOLD A RECORD CONVENTION

The fifteenth annual meeting of the Wholesale and Retail Coal Dealers' Association of Ohio was held at Toledo on the 22d, 23d and 24th of June and was attended by something over five hundred delegates and others who registered. The officers selected for the coming year were: President, W. F. Voegele, Mansfield; vice-president, O. P. Rank, Cleveland; secretary, C. C. Johnston, Columbus; treasurer, W. A. Gipson, Upper Sandusky; directors—W. S. Connor, Columbus; Harry Abels, Cleveland; John Brashears, Cincinnati; H. J. Heywood, Toledo; W. J. Hamilton, Columbus.

There were the usual welcoming addresses and responses, and the usual warm-hearted entertainment by the people of Toledo, in which the coal men were most prominent but not alone, as the hospitality of Toledo is proverbial. The annual reports of officers were followed by a choice program of papers and addresses, among them these:

Thursday afternoon a local committee took the visitors on a ride to Toledo Beach where there was a good time generally and the afternoon was delightfully spent. A buffet picnic luncheon was served and an entertainment at the Toledo Casino in the evening concluded the day. Wednesday evening there was a moonlight excursion on the lake, with music and dancing. The same afternoon there had been a railway trip around the picturesque Toledo Maumee Belt. An automobile ride through the residence district was the Thursday morning feature.

LAKE STRIKE NOT HURTING THEM.

The only influence felt in Pittsburg by the strike of the crews of lake vessels this year has been a smaller demand for fuel coal. The actual shipments to the northwest have been made with as much regularity, the coal operators say, as demanded. The large majority of the steamers carrying iron ore are operating with new crews. These, it is said, are able to care for the coal shipments to the northwest and

will likely be able to do so for the remainder of the season owing to the demand not awakening to the extent that was anticipated at the opening of the season.

The Pittsburgh Coal Company reported its lake shipments as excellent for May and with June keeping up the record. This company supplies a large percentage of the fuel for the northwest and is storing much on its dock in Lakes Superior and Michigan. The Pittsburgh and Westmoreland Coal Company is booked nearly to its mine capacity for coal and is operating absolutely full. Besides shipping a heavy tonnage to the Canadian Pacific railroad it is shipping a large tonnage to Montreal and Eastern Canada for gas purposes. The Grand Trunk railroad of Canada is also taking a large tonnage this year from Pittsburgh mines.

Throughout the early spring and summer the coal trade remained extremely quiet, but the resumption of so many industrial plants throughout the country, it is said, has caused a change in the conditions and nearly every mine, now active, in the district is increasing its output.

CHICAGO COAL MEN'S PICNIC.

The invitation and program of the picnic to be given by the Chicago Coal Dealers' Association on the 17th of July is now in print and the various committee at work in a way that promises success. The picnic will be at River-view Park, near Aurora, Ill., and besides the dancing scheduled for the afternoon there will be an extended program of athletic sports in the morning. These sports will comprise:

1. Baseball game. (Starting immediately upon arrival) between uniformed teams.
 2. Horse shoe pitching contest (all day).
 3. Preliminary 50-yard dash. Free for all. First and second heat to qualify for finals.
 4. Running broad jump. Three trials for each entrant.
 5. Standing broad jump. Three trials for each entrant.
 6. Standing half hammond. Hop, skip and jump. Three trials for each entrant.
 7. Potatoe race. Free for all.
 8. Tug of war. (4 men teams entered by firms.) Each entrant to be directly connected with the firm represented.
 9. Baseball game. (Impromptu.) Retailers vs. Wholesalers.
 10. Final—50 yard dash.
 11. Ladies race. 25 yards. Free for all.
 12. Blinked stake finding contest for ladies.
 13. Peanut finding and picking contest for ladies.
 14. Coal guessing contest for ladies.
 15. Impromptu race for boys under 16.
 16. Impromptu race for girls under 16.
- Judges—L. R. Rutter, Roy Makenson, H. H. Taylor.
Starters—W. C. Hill, A. O. Tandy, H. S. Richardson.
Clerks of Course—F. E. Parker, G. H. Merryweather, H. D. Jones.

THE CLEVELAND, OHIO, TRUST BUSTER.

Patrick J. McIntyre, of Cleveland, O., formerly an independent coal dealer, has filed a deed of assignment in insolvency court. The deed puts McIntyre's assets at \$1,000 and his liabilities at \$3,500. Two years ago McIntyre made a fight in court against the alleged coal trust, trying to secure the conviction of a number of prominent coal men. He worked months with the prosecutors preparing for the trial which ended in a disagreement of the jury. McIntyre is in the saloon business and on the day of his assignment indicted several other coal men.

DANTE, VA., A MODEL MINING COMMUNITY

One of the most important developments of natural resources ever begun in the South, and of especial importance to the mill men and other manufacturers of the South Atlantic coast is that now under way by the Clinchfield Coal Corporation in the famous coal fields around Dante, Va. In order to show them the magnitude of the work being done, the facilities for mining coal and the quality of the products as well as the care of its preparation President John H. Winder recently had a large number of leading South Carolina cotton mill men visit the mines as the guests of the company. A special train of private cars with diner, etc., was handsomely furnished and the hospitality was characteristic of the men furnishing it. On their arrival at Dante the party were at once tendered an elegant banquet and dance in the beautiful school building which has been provided by the Clinchfield Coal Corporation for the children about the mines.

John W. Roan, superintendent of the mines at Dante, had charge of the party in person after their arrival, and on the following morning all donned regular miners' outfits and made a visit through the mines. These outfits were furnished from the company's commissary and presented to the visitors as souvenirs of the trip. Under the direction of Mr. Roan the party boarded coal cars made entirely comfortable, so that better views might be had and visited what is known as the right fork of the development. The right fork is as yet undergoing largely the preliminary work to opening the veins located on it. For the purpose of going into the mines where coal is being actually mined and turned out there was provided a number of dumps used to haul the coal from the mines to the tipples. These cars were drawn up the inclines to the mine openings by large electrically-driven engines.

A Model Mining Community.

Every detail of the mining was gone through with, Mr. Roan showing in detail all the operations, making very prominent the enormous saving, in point of time as well as money, in the modern methods of mining as against old methods. Electricity, generated from one central plant, is used over the entire field for almost every move in the development. The coal is cut by the latest patented and improved coal digging electrically equipped machinery, one machine turning out in a day an amount of coal which is the equivalent of twenty men's work for the same time by the old method.

The visitors to the mines of the Clinchfield Coal Corporation cannot but be impressed with the excellent behavior of the miners and the contentment prevailing and yet, when it is known that they reside in nicely built, prettily painted houses, ideally located from every standpoint, it would occasion surprise if any other conditions prevailed. Each home has running water, electric lights and team heat all furnished by the corporation. In all there are more than 3,000 people employed on the works, representing 27 different tongues. Various kinds of entertainment are provided for the different nationalities. Mr. Roan, the superintendent and a prince of a good fellow, rules in the Dante coal fields as a king, though with a kindly spirit and with even justice, maintaining the dignity of his position and earning the absolute respect of all his employees.

The visitors heartily enjoyed the occasion and appreciated the opportunities given for personal observation. They could not say all they wished to say in praise of what was done for them by President Winder, their host, and to

his able assistants. As President Winder came in to dinner on the last evening of the trip, his guests being already gathered, Capt. Ellison A. Smyth, of Greenville, S. C., on behalf of the party, presented resolutions passed by them. In presenting the resolutions, Captain Smyth said:

Call It a Memorable Trip.

"Your guests on what will ever be to them a most memorable trip have asked me to make their acknowledgments to you and express to you how greatly they have enjoyed the visit to your wonderful mines at Dante and how impressed they are with the magnificent property owned by the Clinchfield Coal Corporation, and the excellent quality of the coal produced by your company.

"They have been charmed with the generous hospitality and the exceeding courtesy shown them by you and your associates through the entire trip and they beg you to accept the following resolutions as a slight expression of their appreciation of the pleasure you have given them.

"We, the undersigned guests of the Clinchfield Coal Corporation, on a most delightfully, entertaining and enlightening visit to the wonderful mines of your company, desire to return our sincere thanks and grateful acknowledgments for the generous hospitality and great courtesy which marked every movement of this memorable expedition.

"Particularly would we desire to return our thanks and acknowledgments to Messrs. John H. Winder, U. S. Morris, John M. Roan, Fred C. Bryan, A. C. Stephenson and W. H. Sartom, of the Clinchfield Coal Corporation, and also to Messrs. M. J. Caples, J. J. Campion and R. F. Brewer, of the Carolina, Clinchfield and Ohio Railway and their associates."

The cotton mill men of South Carolina making the trip were: Messrs. J. H. Morgan, Greenville; A. F. McKisick, Greenwood; Jno. T. Woodside, Greenville; M. S. Bailey, Clinton; C. W. Pritchard, W. Summer, Newberry; B. M. Aull, Autun; E. A. Smyth, Greenville; W. J. Bailey, Clinton; C. M. Bailey, Clinton; W. B. Moore, Greenville; Z. F. Wright, Newberry; C. C. Twitty, Darlington; J. J. Littleton, Jonesville; J. H. Gault, Jr., Union; Alfred Moore, Lockhart; Augustus W. Smith, Spartanburg; John A. Law, Spartanburg; W. C. Hamrick, Gaffney; W. C. Smith, Orangeburg; B. H. Heyward, Rion; J. M. Hatch, McColl; W. M. Brabham, Bamberg; B. D. Heath, Lando; John H. Cope, Bamberg; C. C. Yount, Lexington; W. W. Wannamaker, Orangeburg; J. B. Cleveland, Jr., Spartanburg; C. C. Cleveland, Wellford.

PLANNING A BIG SOUTHERN MERGER.

Negotiations are pending in the Black Mountain coal district of southwest Virginia whereby all of the new coal operations which are now reached by the Louisville & Nashville Railway and the Southern Railway are to be consolidated and owned by one big corporation. It is said that the deal is being negotiated by a Chattanooga man, and that it is now quite probable that it will be consummated. The proposed deal does not contemplate the sale of the coal lands, but only the sale of the plants and leases. There are about a dozen separate operations and each is equipped for a successful mining business. There are so many millions of tons of coal underlying the lands owned by the Black Mountain Coal Land Company, of Bristol, that it is estimated that upon a royalty of 10 cents on the ton, the coal would ultimately yield the landowners \$50,000,000.

COAL PRODUCTION IN FAR WESTERN STATES

The total production of coal in Oregon in 1908, as shown by statistics collected by E. W. Parker, of the United States Geological Survey, was 86,259 short tons, having a spot value of \$236,021.

Oregon, like California, is one of the few states in which the coal production in 1908 showed an increase over that of the preceding year, which was 70,981 short tons, the 1908 output being therefore a gain of 15,278 short tons, or 21.52 per cent; the value increased from \$166,304 to \$236,021, a gain of \$69,717, or 41.92 per cent. All of the coal produced came from the Coos Bay field in Coos county, and the increased production in 1908 was due to an increased activity at the Beaver Hill mines. All of the Beaver Hill coal was washed, the operations yielding 70 per cent of cleaned coal and 30 per cent of refuse. The refuse, however, contains a sufficient quantity of combustible material to permit its use as fuel in the operation of the mines. The coal from this field is of a lignitic character. Transportation is confined exclusively to Coos Bay and the Pacific Ocean, and the city of San Francisco is the principal market. The large amount of construction work involved in the rebuilding of San Francisco is the principal cause for the increased production of Oregon lignite. The average number of men employed increased from 184 in 1907 to 214 in 1908, and

the average number of days worked increased from 231 to 249. There were no labor disturbances during the year.

According to the estimates prepared by M. R. Campbell, of the Geological Survey, the coal-bearing formations of Oregon are limited to an area of 230 square miles, the original contents of which are placed by Mr. Campbell at 1,000,000,000 short tons.

Coal was first noted in the Coos Bay region about fifty years ago, Prof. J. S. Newberry having reported in 1855 that the coal deposits of Coos Bay had begun to attract attention. It is known that some mining was done there in 1855 and in 1872, and that in 1876 two mines—the Eastport and the Newport—were in active operation. The Newport mine, however, was the only one to survive. The Beaver Hill mine was opened in 1895 and is now one of the important producers. The first record of coal production from this field is contained in the census report of 1880, which shows that in that year 43,205 short tons were mined. The production has exceeded 100,000 tons in four years only—1896, 1897, 1904, and 1905—the maximum, in 1904, reaching 111,540 short tons. The total production to the close of 1908 has amounted to 1,876,651 short tons.

The Utah Coal Industry in 1908.

The total production of coal in Utah in 1908, according to information obtained by E. W. Parker, of the United States Geological Survey, was 1,846,792 short tons, having a spot value of \$3,119,338. Although the coal production decreased, in sympathy with the general falling off throughout the country as compared with the preceding year, an increase is reported in the value of the product. The output in 1907 was 1,947,607 short tons, valued at \$2,959,769, and the 1908 figures therefore show a decrease of 100,815 short tons, or 5.18 per cent, in quantity, but an advance of \$159,569, or 5.39 per cent, in value. The average price per ton rose from \$1.52 in 1907 to \$1.69 in 1908. This increase in value and advance in price in the face of the general financial depression can be accounted for only by the increased expense of mining due to a lessened productive capacity of the mine workers. In 1905 the average daily production for each man employed in the coal mines of Utah was 396 tons; in 1906 it was 392 tons; in 1907 it was 343 tons; and in 1908 it was 305 tons. The average production per man for the year shows an even more marked decline. In 1905 the

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average output for each man employed was 979 tons; in 1906 it was 1,127 tons; in 1907 it was 884 tons; and in 1908 it dropped to 693 tons.

Practically all the mines in the state are operated under agreements with the United Mine Workers of America, and out of a total of 2,664 men, 2,620 worked at mines operated on the basis of an eight-hour day. As in the other coal-producing states of the Rocky Mountain region, the number of men employed in the mines shows an increase from 2,203 in 1907 to 2,664 in 1908. The average number of working days decreased from 258 in 1907 to 227 in 1908. The supply of cars was in general ample throughout the year, and there was no trouble from strikes, lockouts, or other labor difficulties. The second half of the year showed a marked improvement over the first half, and the conditions in the metaliferous mining industry at the end of the year were gradually improving, so that the outlook for the coal mines in 1909 was hopeful.

According to J. E. Pettie, state coal-mine inspector, there were 136 coal-mining accidents during 1908. Of these only eight were fatal, and of the 128 non-fatal accidents only 17 were of a serious character. In two of the fatal accidents the men were crushed by coke cars and these should not properly be included among coal-mining accidents. Dust explosions caused 2 deaths and injured 2 men; falls of roof in rooms killed 2 men and injured 6; falls of rock in gangways injured 4 men; powder explosions injured 2 men; 12 men were injured and 2 killed by being crushed by mine cars; and 102 injuries are attributed to other causes not specified. The death rate per thousand employees was 3. The number of tons mined for each life lost was 230,849.

The areas in Utah known to contain workable beds of coal are estimated by M. R. Campbell, of the Geological Survey, to aggregate 13,130 square miles, and there are in

addition 2,000 square miles of which little is known but which may contain workable beds of coal. The original contents of these fields are estimated by Mr. Campbell to have been 196,458,000,000 short tons of coal. The first production of coal in Utah was reported in the census year of 1870, when 5,800 tons of coal were mined. The output exceeded 1,000,000 tons for the first time in 1900 and reached its maximum of 1,947,607 tons in 1907.

The total production since mining began in 1870 to the close of 1908 has amounted to 20,683,974 short tons. On the basis of one-half ton of coal wasted for every ton of coal mined and marketed, the exhaustion during this period has amounted approximately to 31,000,000 short tons, or 0.016 per cent of the original supply.

FROM CIRCUS CLOWN TO COAL BARON.

Joseph V. Sherry, of Kingwood, W. Va., has been metamorphosed from a circus clown to a coal baron. He recently arrived in his old home with the John H. Sparks circus and discovered that on land he purchased a few years ago coal had been discovered, and that he was being sought by a coal syndicate desirous of buying his holdings. He has quit the circus. When he made the purchase, Sherry thought merely to establish a home to which he could retire when his show and traveling days were over. The tract was cheap. After purchasing it, Sherry went on with the circus, secured the deed, and then dropped out of sight. A few months after his departure coal was discovered upon the land adjoining Sherry's.

Midway mine of the Cambridge Collieries Company, Cambridge, Ohio, has resumed operations. This mine has been idle for many months, during which time many repairs have been made. The mine employs 200 men.

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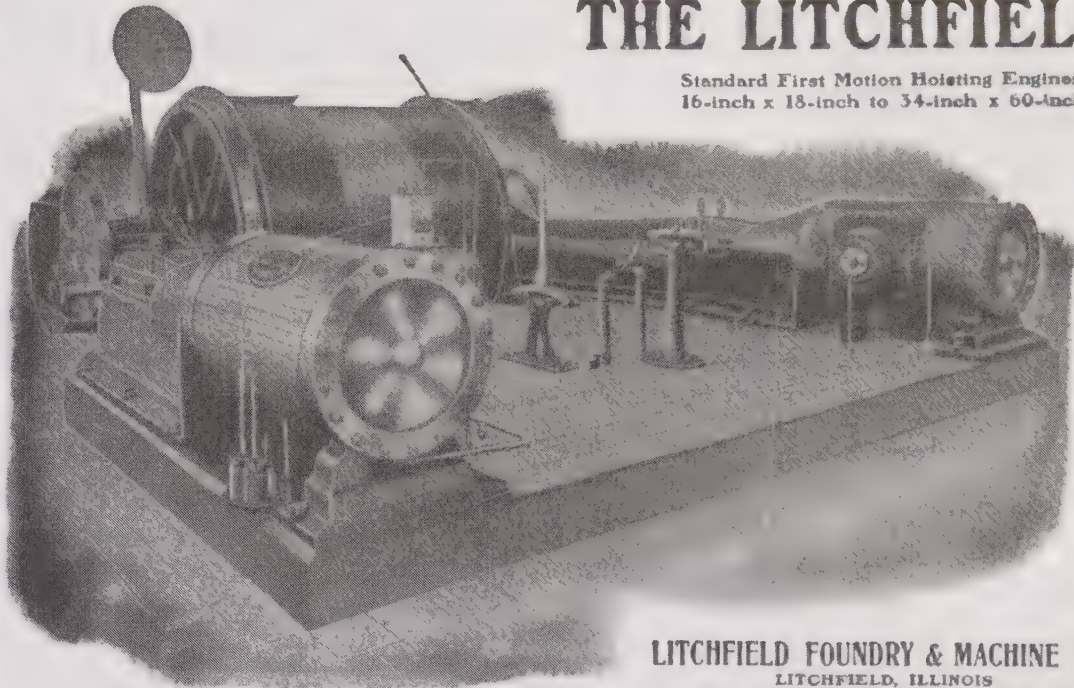
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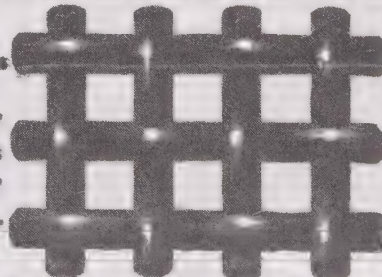
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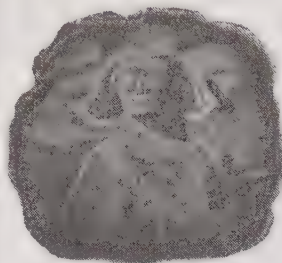
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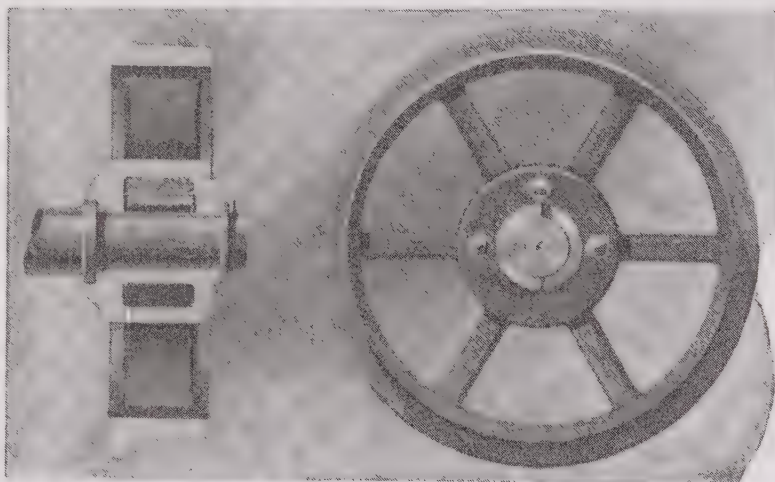
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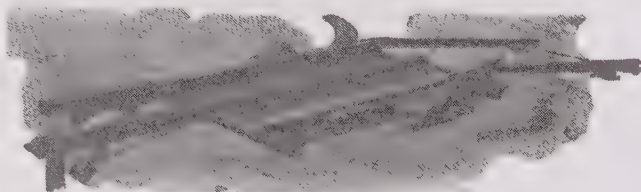
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Big Snake in Alabama.

J. A. Mordant, a farmer residing near Joppa, Ala., came near losing his life, so he says, in an encounter with a coachwhip snake of mammoth size. Mr. Mordant says he was returning home from Joppa when attacked by the snake, which quickly wound itself around his body and would have pressed the life out of him had it not been that he succeeded in getting his pocket knife out and cutting the snake so badly that it released its hold on him. He then killed the snake with a stick of wood. He says that the snake measured fifteen feet long and weighed thirty-five pounds. Several of Mr. Mordant's neighbors say that they saw the snake and corroborate Mr. Mordant in his statements regarding the snake and the encounter with it.

Found a Ball of Snakes.

John and George Aber, sons of George Aber, a farmer residing near Rochester, N. Y., while working in the woods on their father's farm, overturned a large rock, under which they found a ball of snakes. The snakes were coiled in bulk as large as a bushel basket, and the lads succeeded in killing all of them. There were fifty snakes in the bunch, including many milk snakes, garter snakes, several black snakes and other species.

Rattlesnake Bite Cures Cancer.

While Mrs. Wilhelmina Lodwig, wife of a farmer living near Port Jarvis, N. Y., was out picking berries she was bitten on the ankle by a rattlesnake. Her nephew, Karl Lodwig, came to her assistance and killed three rattlesnakes. The woman's leg was swelled to an enormous size, but the swelling did not go above a cancer on her leg, which had always had the appearance of ink, fringed with red, but turned into a running sore after the snake bite and remained in this condition for four days. On the fourth day the discharge stopped, the swelling disappeared and the heretofore ugly looking cancer began to heal, and turned to a healthy flesh color. Gradually the wound entirely healed, the cancer healed, and no symptom of either has since annoyed her.

Prisoners See a Real One.

The discovery of a real live, crawling snake in the ward for "drunks" at a police station in Atlanta, Ga., caused a wild panic among the befuddled inmates. Officers are accustomed to hear prisoners yell "snakes!" despite the fact that Atlanta is said to be a dry town, but investigation of the cry of a prisoner this time showed the presence of the reptile. It was brought in by a negro prisoner, who concealed it while being searched. He was heavily fined for the act.

Soothed a Snake by Whistling.

"Should you ever encounter a rattlesnake," said John J. Shelton, of Petersburg, Tenn., "don't you be afraid. Don't fight him. Just whistle. Just whistle softly—ever so softly—just as though you were rocking a baby to sleep—something pathetic, if you can think of it. In a minute you'll see the gentlest snake possible. He'll close his eyes and his whole body will quiver.

"I saved my life once in this way. I was practically at the mercy of a snake when I tried the scheme. I whistled with all the music that was in my soul, and in nine shakes

of a ram's tail Mr. Snake seemed to lose all his fighting power and appeared to close his eyes and go to sleep. That was the signal for me to cut and run.

"But, remember, and don't let any one cut this out, after you've soothed him with your whistling don't stay too long."

Snake in a Hen's Nest.

Coiled in a nest under an old mother hen and her brood of a dozen little chicks, a four foot blacksnake made things lively when it was accidentally disturbed by Mrs. John Oatman, wife of a farmer in the suburbs of Burlington, N. J. The hen and her brood were confined in a little coop near the house, and the angry clucking of the old hen brought the farmer's wife to the scene. She lifted the coop in the dark and put her hand down into the nest to see if the chicks were all safe. There was a shriek as the woman felt something squirm in her hand, and she caught a glimpse in the dusk of the reptile gliding swiftly away. Farm hands arrived too late to dispatch the unwelcome visitor.

The Revengeful Bull Snake.

Artesia, Cal., comes up with the story of a revengeful snake. M. R. McKinney, a rancher, finally killed a bull snake which had been following him for four days bent on avenging the death of its mate, which McKinney killed. McKinney had started to drive to town and as he passed through a gate the snake, which was again lying in wait for him, glided out of a hedge and wrapped itself about one of the buggy wheels. Every time the wheel revolved, bringing the reptile to a level with the seat, it struck at the rancher. It did this four times before McKinney succeeded in getting in the fatal blow.

A Snake That Ate Pie.

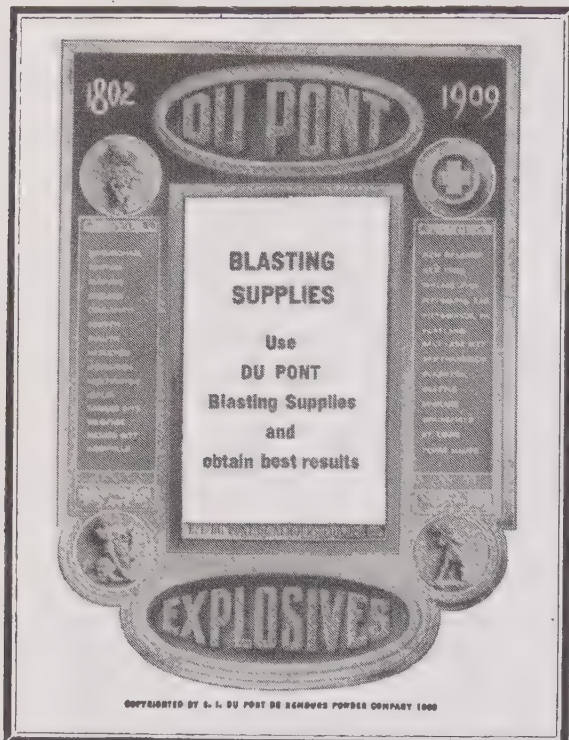
On entering the pantry of Mrs. Louis Longbrake in Jackson Township, Findlay, Ohio, Mrs. George Young was horrified to see a big snake swallowing a pie that had just been set there to cool. Her screams were heard by men who were near, and they killed the snake.

London Makes Pets of Them.

Snakes are in great demand in London as pets for society children, according to a dealer in animals. They are not expensive, the highest prices being about 7 shillings. Green frogs, toads and lizards of bright hues also are greatly favored and a large department store makes many sales in them.

Six Rattlesnakes Rule a Ship.

Six big rattlesnakes worked out of their heavy wooden cages on board the Southern Pacific steamship El Alba when the ship was 100 miles off from Galveston bound for New York. An aerogram stated that the half-dozen reptiles had driven the crew to the rigging and they refused to assist the officers in recapturing the snakes and caging them. The ship had on board about twenty monster rattlers caught in the lower Rio Grande valley. The officers were afraid to kill the snakes unless absolutely necessary, and for a full day the reptiles were circled around the rails on deck in complete possession of the heavy-laden freight vessel with the officers and crew prisoners on their own ship. The reptiles were finally caged again.



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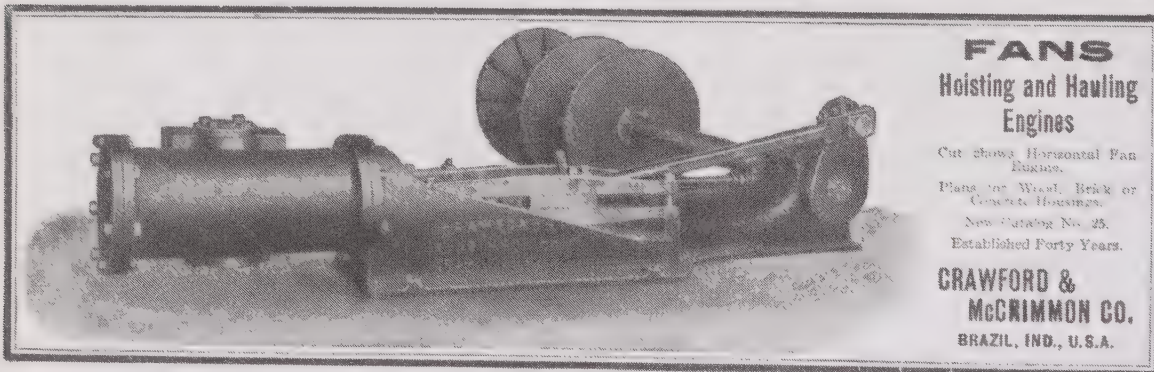
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Vol. XIII. No. 10.

CHICAGO, ILL., JULY 6, 1909.

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RETAIL COAL MEN IN SESSION TWO DAYS

Illinois and Wisconsin Dealers Discuss Live Topics and Hear a Number of Notable Papers by Experts in the Various Branches of the Industry—President Robinson Reelected for Another Term.

The fourteenth annual meeting of the Illinois and Wisconsin Retail Coal Dealers' Association was held in Chicago last Tuesday and Wednesday with a good attendance and considerable interest was manifested in the paper read and in the matters discussed. The early morning of Tuesday was passed in assembling at the Sherman House, the exchange of greetings, registering and distribution of badges, the program starting at 10 o'clock with the song, "Coal, Coal, Coal," and the greeting on the part of the Chicago coal trade. This was spoken by W. S. Bogle, president of the Crescent Coal and Mining Company, who has such a knack of doing that sort of thing gracefully and well that his services are much in demand. The happy little talk he made was cordially received and loudly applauded.

The response on behalf of the association was made by Delos Hull, who is another speaker that never fails to interest his audience. Mr. Hull put a good deal of sensible suggestion in his response, referring to the chaotic conditions prevailing before their organization was formed, the good that had been done both the retail and the wholesale trade, and closed by saying: "I am sure that there is not a retail coal merchant in the states of Illinois and Wisconsin that would not receive far more benefit for the small amount of money it costs him to attend the annual convention than he can in any other way—that is, if he comes here with his mind made up to attend every session, and to be ready to ask questions and obtain all the information possible. Do not be afraid to speak out in meeting. . . .

"It seems to be the thought of the average coal merchant to believe that all that is necessary to have a successful association is to meet, elect officers and then to leave it to them. That is all right so far as it goes, but in order to have a good progressive association, every member must put his shoulder to the wheel and push. It does not matter how efficient the officers may be, they cannot succeed without the earnest support of each member. There is another thought that comes in right here, one that comparatively few members seem to remember, and that is, in helping the association you are not only helping better your own condition, but you are doing something to help your brother coal merchant. Does not there always come to you a feeling of satisfaction to know that you have done some act to help along someone who is perhaps not quite so well able to 'stem the tide' as you have been? I certainly believe that every man is happier and a better man himself, for extending a helping hand to others, and that is just what we are doing in our association, simply helping each other, therefore let us join hands, and all lift together, thereby showing to all the world that the grand old Illinois and Wisconsin Retail Coal Dealers' Association is still in the lead, and proposes to stay there."

President H. A. Robinson, in his annual address, spoke

some plain words to the members on the subject of neglected opportunities, and the reasons he thought had operated to deprive the retail coal dealers of the two states of what they desired in the way of legislation in their interest. He said in part:

PRESIDENT ROBINSON LAMENTS THE LACK OF CO-OPERATION

"The past year's experience has shown me that 'the harvest is great and the laborers are few.' The principal task undertaken was to secure the passage of a reciprocal demurrage bill in the states of Illinois and Wisconsin, which, if passed, would have been a saving of thousands of dollars not only to the retail coal merchants, but to every individual handling carload commodities. Secretary Lukens sent out notices to every association in the state enclosing copies of the bill and soliciting aid in contributions of any amount they saw fit in order to give us sufficient funds to do effective work for the passage of the bill. Unfortunately we received no help at all from this source; we did, however, get contributions from two individuals who are friends of the association.

"We sent notices to every retail coal merchant in Illinois and Wisconsin who were not members of our association stating the benefits to be derived from the passage of the bill and asking their assistance by giving us an application for membership in the association, and we did not secure enough new members to pay for the expense connected with sending out the literature. If we had had two-thirds of the coal merchants of Illinois and Wisconsin as members it would have given us sufficient funds to have secured the passage of the bill as it reads or in an amended form. After the first reading of the bill in the Illinois legislature it was referred to the railroad committee. We were notified of the date that the bill would be considered by the railroad committee, and we asked some forty or fifty coal merchants in central Illinois to appear with us before the committee at Springfield when the bill was taken up for consideration. There were but four of those notified present at that meeting. With this apparent lack of interest among the retail coal merchants is it to be wondered at that the bill failed to be reported out of committee?

"The reason for a bill similar to the Illinois bill not being introduced in the Wisconsin assembly was that I made several requests to Wisconsin members asking if they knew of an assemblyman who would introduce the bill in Wisconsin and replies were delayed so long that it was too late to get any action taken before the session closed. Inasmuch as our Reciprocal Demurrage Bill failed to become a law, I would suggest that our association take up at the

earliest possible opportunity the average plan of demurrage, which is working satisfactorily in several states. I am quite confident that we might secure the passage of the average plan.

"Another question that should be taken up is that of destination weights. We are all painfully aware of what our shortages on coal amount to. We likewise know it is not the fault of the operator or shipper, but is due in most cases to the fact that railroads fail to give the same protection to coal in transit that is given to other commodities. We can see examples almost daily in our railroad yards, where railroad employees coal their way-cars from cars adjoining, flagmen at crossings supplying their shanties as well as their homes and selling to neighbors from cars regardless of who the consignee is. When finally the car of coal reaches destination, Mr. Coal Merchant finds the car from one to ten tons short with little or no redress. It is high time that action be taken that will give us relief.

"There are twenty-three hundred dealers in Illinois and Wisconsin who do not belong to the association. Since January 1, 1909, Secretary Lukens has sent out nearly twenty thousand pieces of literature to members and non-members for the purpose of increasing our membership. The returns have been comparatively small and not commensurate with the cost of sending them out. We visited a number of cities with satisfactory results, which goes to prove that personal work is the most effective. Mr. Lukens wrote some two hundred dealers in seventeen cities offering our services for local meetings if they wished; he received less than thirty replies, some favorable to hold meetings, some disinterested, and from a number of cities he received no replies at all—notwithstanding the fact that the retail coal situation in some of these cities is in a deplorable condition. It is a difficult task to try to help those who do not care to help themselves. There is not a retail coal merchant that would not like to have trade conditions in his locality bettered; this being the case, why should not everyone do his part, get together, pull together, and with the help of the association they would be able to overcome the many evils with which they are at present contending.

"An association is no stronger than the membership of which it is composed. If the members are inactive and take no interest in supporting the association and its objects, it is a foregone conclusion that the association will be inactive and its work barren of results.

"The prompt payment of yearly dues is commendable, but your obligation should not cease with their payment; the association needs the personal work of every individual member. In what way could you more profitably to yourself as well as to the association spend a portion of your time than in soliciting applications for membership from local dealers who do not belong, or, if you are taking a pleasure ride in your automobile (I take it for granted that you all have automobiles—I have not), visit dealers in your neighboring cities or towns who are not members and induce them to join the association. It is an indisputable fact that if your local dealers and the dealers in your neighboring cities are association members you will have a better class of competition. In many instances trade conditions in neighboring cities and towns help to govern, and have their influence over your local trade conditions.

"The coal trade journals deserve a great deal of credit for the good work they are doing in educating the shippers of coal to market their product through legitimate channels; they likewise are making it unpleasant for the retail coal merchant who cancels an order for a car of coal after it has arrived at destination on some slight pretext without any grounds whatever for such cancellation, giving them as much publicity as is given the illegitimate shipper. A trade journal should be a part of the equipment of every

retail coal merchant, and no up-to-date coal merchant should be without as many as he can pay for. The columns of these journals are open to all who care to use them, and we should use them more than we do in furnishing them articles on different phases of the coal business, which would be interesting as well as instructive to the retail man as well as the shipper. I am glad that the great majority of shippers recognize the rights of the retail merchants and are working in direct harmony with them. Our interests are mutual and we should strive at all times to maintain this good feeling."

SECRETARY LUKENS' REVIEW OF THE YEARS ACHIEVEMENTS.

Secretary Frank E. Lukens gave a review of the year, which was in many things encouraging, but pointed out the tendency of the retail coal merchants to take less active interest in time of peace and quiet than in times when troubles gathered thick about them. Said he:

"It is with considerable pleasure that I am able to report that the past year has been the most quiet in the history of the association, so far as irregular shipments or shipments direct to consumers are concerned, and while this condition must be gratifying to all members of the association, yet at the same time, the very fact that you have been so successful in eliminating this evil, causes many dealers to become careless in the payment of their dues, and no doubt has weakened the association in the way of increasing the membership.

"It is a well-known fact that dealers drop out of the association when they are having no trouble in the way of consumers buying their coal direct, and this fact can be illustrated in many instances. In one city in Wisconsin where there are fourteen dealers, two years ago they dropped their membership in the association, and for two years they had no trouble with irregular shipments, but this spring they found that some consumers were getting in anthracite coal direct from the wholesale trade, and they awoke to the fact that their town was an open town so far as they did not have any members in the association, and as a matter of course, could not appeal to the association for assistance.

"I have noticed by some of the question blanks returned from some of the members that there have been a few irregular shipments made that were not reported to the secretary, and the reason given was that they did not think it would do any good. This is a very serious mistake, because, the reporting of these irregular shipments and the taking up with the shipper and keeping everlastingly at it, has been the means whereby your association has been so successful in eliminating the evil.

"At your last annual meeting, you had a membership of 649 regular members. During the twelve months, we have received into the association 168 new members and have lost by resignations 54 and by concerns going out of business with no successor 52, a total of 106; giving you at this time 711 regular members and a net gain for the year of 62, which is certainly a very creditable showing under the condition of the retail coal trade as it has been during the past year, and your worthy president deserves a great deal of praise for this most excellent showing.

"At your semi-annual meeting in Milwaukee last December, there was some discussion as to the advisability of having associate or honorary members, and for this reason there has been no effort put forth to increase the associate membership. However, referring to our attorney's report delivered at the annual convention in July, 1907, relative to associate membership, I will quote their opinion

that you may know why it is beneficial to your association to have the wholesalers with you as associate members:

"If the wholesalers or mine operators sell coal in our different cities without any regard for the retail dealer, you might as well not have this association, that condition cannot be corrected by any question of law or by invoking any principle of law. You cannot, by any process, undertake to form a corporation or an association the purpose of which is to interfere with trade. It therefore becomes the duties of the officers of the association and the individual duty of every member to co-operate in carrying out the present objects of the association, common usefulness; in other words, the retail coal dealer is an instrument of use for the benefit of the coal trade; and going from that promise, we argue to the wholesaler and to the jobber and to the mine operator, 'your prosperity, the success of your business and your enterprise depend upon the proper distribution of your coal, and without the retail dealer you cannot effectually at all times dispose of your coal.'

"That is the legal argument, and that is as far as we can go on paper. There is not any law that will prevent any member of this association, as an individual, from saying to Mr. Coal Operator, or to Mr. Mine Owner, or to Mr. Jobber, or to Mr. Wholesaler, you are not a member of our association. We believe that our association is organized for the benefit of the general public at large, and that includes you, and unless you become a member of our association you are not in sympathy with this movement, which is not an illegal or illicit movement.'

"Therefore, if the arguments in favor of associate membership are good, it might be better if the annual dues of associate members were placed at \$1.00 per year if this would be the means of bringing in every mine owner and wholesaler doing business in the territory of the Illinois and Wisconsin Retail Coal Dealers' Association, but I do not think it is the amount of the annual dues that keeps any reputable mine operator or wholesaler from becoming associate members.

"A year ago, you had 78 associate members, and have received during the year 4 new members and lost 14 by resignations and concerns going out of the business, giving you a net associate membership to date of 68.

"Another gratifying condition is the fact that your indebtedness during the present year has been reduced from over \$2,000, reported at the last annual meeting, to less than \$900. The receipts for the year have been as follows:

From bills payable	\$ 500.00
From sale of Coal Dealers' Friend, net proceeds	285.00
From advertising in Coal Dealers' Friend...	450.00
From office rent	20.00
From subscriptions	20.00
From dues of members	4,347.90
Total	\$5,622.90
Paid over to treasurer	5,511.42
Leaving balance in secretary's hands.....	\$ 111.48

"The treasurer's balance July 8, 1908, was \$12.11, and the amounts turned over to him during the year were \$5,511.42, out of which he paid vouchers No. 1 to No. 58, inclusive, which were duly approved by your auditing committee, the sum of \$5,512.80, leaving a balance in his hands of \$10.73 and a total balance including amounts in the secretary's and treasurer's hands of \$122.21.

"The expenses for the year have been as follows:

Salaries and office expenses	\$2,936.77
Printing and postage	1,680.13
Traveling expenses and meetings	300.90
Bills payable and interest	595.00
Total	\$5,512.80

"There is due from members, dues amounting to \$800. We have cash on hand \$122.21, and we have books, 'The Coal Dealers' Friend,' which, at 50c each, would bring us in \$240; a total of \$1,162.21.

"We are owing accounts to the amount of \$315.52: Secretary for June salary, \$150; for office rent and stenographer, \$50; for bills payable amount of notes held by executive board, \$530; a total of \$1,045.52. The balance of resources over liabilities is \$106.09.

"A great many local meetings have been held throughout Illinois and Wisconsin during the past year, and these meetings have been the means of largely increasing the membership. President Robinson has attended most of these meetings with your secretary, and Delos Hull of Oak Park, Ill., has attended several at his own expense and has been of great assistance in the work of forming local clubs and securing new members.

"Before this convention adjourns resolutions thanking the coal trade press for their hearty support of association work should be unanimously adopted.

"In conclusion I desire to extend my thanks and appreciation of the assistance rendered me by President Robinson, Delos Hull and the members of the executive board."

In the afternoon there were three very entertaining and instructive papers read to the association, and one most helpful address. These were: "Cost of Producing Coal at the Mines," Carl Scholz, president Coal Valley Mining Co.; "The Sale Is the Thing," Edward F. Trefz, Chicago, Ill.; "Costs and Systems in a Retail Coal Business," Homer D. Jones, Western Fuel Co., Chicago, and "Average Demurrage," E. L. Ewing, Peoria, Ill.

These were followed by some discussion on the subject of Correct Weight Local Associations, during which President Robinson gave a talk on the methods adopted by the Peoria, Ill., Correct Weight Association.

Wednesday was given over to an excursion by Steamship Theodore Roosevelt to Michigan City, Ind. A morning session was held on the outbound trip, and an afternoon session during the return. Four hours were pleasantly spent in Michigan City. The entire morning session was devoted to a "Round Table" discussion of various topics of interest to the association and the coal trade, brought up by question blanks received from members.

At the closing session the report of the resolutions committee was adopted, matters of interest to the dealers talked over, and officers elected for the coming year. Among subjects to receive attention were the mail order system of selling coal, the American Society of Equity, various methods in vogue with certain dealers of doing business, and the usual interesting question box.

The resolutions reported and adopted thank the management of the Sherman House for courtesies extended; thank President Robinson for his enthusiastic work during the year; thank Walter S. Bogle, Delos Hull, Carl Scholz, Edward F. Trefz, Homer D. Jones and E. L. Ewing for their excellent addresses. They ask each member to make an effort to secure at least one new member during the coming year. It was also resolved that in consideration of the many favors and the hearty support of association work by FUEL and the other coal trade papers, the association extends to them its best wishes, sincere thanks and assurance of appreciation.

President H. A. Robinson, of Peoria, Ill., was re-elected for another term; C. N. Fintell, of Geneseo, Wis., was made vice-president; W. H. Johnson, of Bloomington, Ill., was elected treasurer; C. L. Moore, of Kankakee, Ill., was elected director to fill out an unexpired term of one year; for director for the three-year terms, Joseph Vial, of La Grange, Ill., and J. S. Cusick, of Oregon, Wis., were chosen.



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Whoever Loves is Never Old.

RALPH WALDO EMERSON.

WHEN life has been well spent, age is a loss of what it can well spare—muscular strength, organic instincts, gross bulk, and works that belong to these. But the central wisdom, which was old in infancy, was young in fourscore years, and dropping off obstructions, leaves in happy subjects the mind purified and wise. I have heard that whoever loves is in no condition old. I have heard that, whenever the name of man is spoken, the doctrine of immortality is announced; it cleaves to his constitution. The mode of it baffles our wit, and no whisper comes to us from the other side. But the inference from the working of intellect, hiving knowledge, hiving skill—at the end of life just ready to be born—affirms the inspiration of affection and of the moral sentiment. ♡ ♡ ♡ ♡ ♡

The cessation of work in the Osage district of Kansas seems to be due to an oversupply of Howatt. When a district president places himself and his opinions above the trade agreement solemnly signed, and above the reach of the national officers of the mine workers, it is high time that he get a call-back from the miners who do believe in keeping agreements, and who do want to work.

WHAT KOKOAL STANDS FOR.

The growth of Order Kokoal is an evidence of the good of men coming together out of business hours in a way not possible in the hours of the day given to the pursuit of business. In the rush which the strenuous times and conditions too often demand of men to-day animosities grow up from business rivalries until competitors become nearer enemies than friends and lose sight of the fact that competitors are animated by motives no different from their own. The success of a competitor is too often construed rather as a personal affront than otherwise, and cases have been known where such feelings prompted action resulting in loss to both parties, the innocent and the thoughtless alike. It was in recognition of this fact and of the peculiarly strained relations existing in the coal trade in some sections that Kokoal was conceived, and it was in response to the general recognition of its need that it has grown.

On the occasion of his first official visit to Chicago Imperial Modoc Charles E. Lester said in a little talk he made at a koruskation that he doubted whether the originators of Kokoal knew the importance and magnitude of what they had done when they inaugurated the new organization, enthusiastic as they were. And the greatness of the organization has become more apparent every year of its growth. The Pow-Wow at St. Louis on the 9th, 10th and 11th of this month is but the fourth, and yet it will bring to St. Louis representatives of nearly four thousand members, each member the representative or owner of some coal enterprise, and as a body representing an industry amounting to too many millions of dollars to be counted hastily. There is a spirit of cordiality and a spirit of fraternity that was until recent years a stranger to the coal trade. Retail dealers in many small cities have fought each other, cut prices till none of them could get a living from the amount of business the town could afford, and have been too often not even on speaking terms with each other. In an Illinois town two coal dealers were just on such terms. One of them came to his retail convention and joined the order. The day he returned home he went across the street to the office of his competitor to whom he had not spoken for eight years and "got acquainted." The next time there was a koruskation in Chicago the other dealer was on hand with the statement that he wanted to know more about an order like that. And there are no better friends anywhere now than those same two men.

Kokoal discourages knocking and petty jealousies and teaches that the other fellow is a pretty good fellow after all. It inculcates the truth that the world is too little and life too short for hate; that men are pretty nearly all alike in some ways, and that you can see the best side of the other fellow by showing him a little of your own better nature. It seeks to impress on its members with the truth that it is a pretty good world after all, and that maybe the other fellow is just as good a fellow as you are—sometimes a little better; that men are men and that most of them will improve on closer acquaintance. And so Kokoal is going to go on growing and go on helping to make the world better—which

it is sure to do if it just goes on bringing men to know each other better. A good many men have said or thought, after getting really acquainted with a business rival: "Why, when I got to know him I was surprised to find out what a decent sort of fellow he was."

Go to the Pow-Wow next Thursday night and get your ideas lubricated; if you don't want to go, you need more lubrication than you thought, and need to go the more. You will be surprised to find what an accumulation of grouches, bickerings, knocks, sour looks, and all such things you will leave behind you. Better throw them away before you start, and save the Swatta trouble, but if you can't quit without help, you'll get the help.

VALUABLE BIBLIOGRAPHICAL WORK.

The thorough investigations made of library history in Illinois by Katherine L. Sharp Mills, M. L. S., formerly director of the Illinois Library School, but now a resident of Essex County, N. Y., have borne fruit in the form of five handsome bulletins issued by the University of Illinois, the last of which is now from the press. Two of the parts had been issued as University Studies when the work had assumed such proportions that the university authorities had to consider the question of expense involved. The work had then completed the general statement and the history of public libraries outside of Chicago. So generally had the work appealed to those interested that when the announcement was made that the remaining parts could for a time be consulted in the manuscript form at the library, that librarians and libraries throughout the state voluntarily contributed sums sufficient to secure the earliest possible publication.

The four preceding parts comprised General Statement. Public Libraries excepting Chicago, College School and Special Libraries excepting Chicago, and Chicago Libraries. The fifth part is devoted to library buildings, and considers cost, plans, etc., with a large number of architects' designs and half-tone illustrations of the present library buildings of this state. These are of great value in a practical way, embodying the best thought of leading architects on the library problems, and add to the helpfulness of the work done. A full and clear index is appended, including the five parts, which are paged singly and consecutively, forming a splendid volume of nearly eight hundred pages. The paper used is of a quality to make a veritable de luxe volume when the parts are permanently bound. As a work on library architecture the present part is large value for the dollar, which will secure a copy from the University of Illinois, Urbana, Ill.

Another of the University Studies just issued is "The History of Cumulative Voting and Minority Representation in Illinois, 1870-1908," by Blaine F. Moore, with a preface by J. W. Garner, Ph. D., the former a graduate scholar and the latter Professor of Political Science in the university. It is an interesting chapter in the political history of the state, and can be had for fifty cents by addressing the university.

If you read FUEL you like it; if not, you have pleasure ahead of you. Get a copy.

There are two viewpoints in the proposed consolidation of the retail coal dealers' associations, one being the argument for a strong association and the other being the danger that an association may become too large to have the personal loyalty of every member. The problems of the retail coal business are alike in a general way, and at the same time differ in every locality, so that the danger of unwieldiness may be accentuated by the multiplicity of local differences. But in strong hands there is power in a large association, and efficient officers may be able to deal properly with troubles as they arise. The friends of organization certainly hope that they will never "progress backward."

Will you observe that the subscription price of FUEL is now two dollars a year?

President Robinson, of the Illinois and Wisconsin Retail Coal Dealers' Association, to the value of the coal trade journals, the association itself adopted a strong resolution on the subject. It is up to the members of the association to do the rest. The man who reads his own trade journals is the only man today who can keep in touch with existing conditions in his line of business. Not a single issue of FUEL, but is worth the price of the yearly subscription if it is read and acted upon. Two dollars is the price of 52 weekly calls.

If you will send us two dollars we will send you FUEL a whole year.

MINE INSPECTORS MAKE SERIOUS CHARGES.

Deputy Inspectors John A. Springer, of Flemington, and J. F. Bratt, of Independence, have forwarded to Governor Glasscock formal charges against State Chief Mine Inspector John Laing, of West Virginia, alleging neglect of duty, incompetence, misappropriation of state funds, inexperience and ignorance of the state mining laws. They ask for a day on which to introduce evidence in support of their charges.

ANTHRACITE OPERATOR GRANTS CHECK-OFF

President Haddock of the Plymouth Coal Company, owning collieries at Plymouth and Luzerne, has agreed to grant the check-off system demanded by the union. He is the first coal operator in the anthracite region to grant this. Hereafter at the company's mines the monthly dues of the mine workers to the union will be deducted from their wages by the company and turned over to the union.

CHILI BUYING VIRGINIA COAL.

Admiral Perez Garcitua, of the Chilean navy, has been in the Virginia coal fields, where he went to investigate grades with the view of making a contract for the delivery at Tidewater of 2,500 tons of coal a day for an indefinite period. The admiral is acting for his government and says the coal is wanted for the Chilean navy, which is being enlarged.

There was 4,400 tons of coal produced at the Van Houten mine, Van Houten, N. M., May 28, and the limit for a ten-hour day has not been reached. It is believed this day's production is a record breaker for all mines in New Mexico and Colorado.

INDIANA COAL PRODUCTION LAST YEAR

According to the report of State Geologist W. S. Blatchley, which will be ready for distribution about September 1, Indiana coal production for 1908 showed a decrease of 1,253,411 tons in comparison with the production for 1907, or 9.4 per cent. This decrease was found to be due principally to the commercial, financial and manufacturing depression which set in in 1907 and continued well into 1908. This depression was felt most keenly in the production and sale of bituminous coal, the block coal of the Clay and Parke county fields showing a smaller per cent of decrease, as this coal is used chiefly for domestic purposes. Of the total loss, the block coal fields sustained only 22,273 tons. The amount paid for mining block coal in the state in 1908 was \$1,035,947.

The coal tonnage produced in 1908, together with the county producing it, and the amount paid in wages by the producers, is given as follows:

Counties.	Tons.	Wages paid.
Vigo	2,617,915	\$2,239,464.83
Sullivan	2,585,993	2,193,550.85
Greene	2,257,646	1,767,935.38
Vermilion	1,139,669	1,012,142.99
Clay	1,029,161	997,286.65
Parke	602,945	639,925.52
Knox	427,999	298,959.11
Pike	424,995	345,966.06
Warrick	424,053	299,663.21
Vanderburg	253,774	266,235.22
Gibson	170,421	163,179.24
Daviess	43,185	58,073.21
Fountain	15,849	18,468.20
Perry	3,729	4,018.97
Totals	11,997,304	\$10,304,869.65

Report on Indiana Coals.

The report on the coals of the state for the forthcoming volume has been prepared by Dr. George H. Ashley, of the United States Geological Survey, and is the most exhaustive study of Indiana coals that has yet been prepared for distribution in the state. Since the former coal reports were completed a large number of new "bores" have been sunk by the coal men, and consequently the investigator had a much larger field of data from which to draw. The important parts of the discoveries have been collected in the form of questions and answers, designed to impress more emphatically what the investigator has to say. Mr. Ashley's work is supplemented in a large degree by data collected by James Epperson, state mine inspector, and his deputies.

Some of the important points recorded concerning the coals of the state are the following:

"Indiana coals are the peer of any with which they are called on to compete."

"Recent experiments with coals from the Linton field promise great success in coking. All Indiana coals will coke."

"Indiana coals will produce producer gas high mechanical value."

"The following counties are practically all underlaid with coal: Parke, Vermilion, Vigo, Clay, Sullivan, Greene, Knox, Daviess, Martin, Gibson, Pike, Dubois, Posey, Vanderburg, Warren and Spencer, sixteen in all."

"The coal measures in the state are approximately 1,300 feet in thickness, but the main coal bearing divisions will be included in 500 feet."

"Indiana coals can be mined successfully and economically."

"Indiana, on a conservative basis, has fifty billion tons of coal 'in sight,' or that can be mined. Of what is at this time considered a workable coal, the supply is about fourteen billion tons. It is being used at the rate of about 13,500,000 tons annually. If mining continues at the present rate the workable supply will last about one thousand years, but if it continues to increase at the rate it has increased in the last decade, the workable supply will be exhausted in about one hundred and fifty years. Sullivan county has the greatest supply, about ten billion tons being 'in sight.' Four billion tons are recoverable under present working conditions."

"Indiana coal lands cost from \$25 to \$150 an acre, and royalties run from 2 to 12½ cents a ton. The cost of mining ranges from 55 to 85 cents a ton. The average selling price at the mine is \$1.08."

Think They Were Overtaxed.

Asserting they were over-assessed and have not been able to get the Board of County Commissioners to refund the money due to them, the Jackson Hill Coal & Coke Company and the New Pittsburg Coal & Mining Company have filed suit against Sullivan County, Ind., for the refunding of more than \$4,000. The assertion is made that in 1891, '92, '93, '95, '96, '97, '98 and 1904, the companies were assessed too heavily. The Jackson Hill Company, which is one of the largest operating in the Indiana field, sues for \$2,220.28; the New Pittsburg Company for \$1,997.08.

Indiana Coal Operators' Association.

The recent meeting of the Indiana Bituminous Coal Operators' Association, held in Terre Haute, was not largely attended, as is usually the case of the midsummer meetings. Many of the operators were away on business or summer vacations, and as there was little of importance to come up, remained away. The regular routine business was transacted, but owing to the small attendance, the matter of the proposed life-saving station was not taken up officially, as had been expected. The matter was discussed during the meeting and several of the operators gave their views on the proposition. Most of the men were in favor of the move and it is probable that definite action will be taken at the next meeting.

Demas Coe, county auditor, is beginning to think that the local coal dealers are not anxious for business. For the past week he has been advertising that next Saturday the county commissioners will let the contract for 550 tons of coal, more or less, yet but one of the local coal dealers has submitted a bid on the contract.—Thus, the *Richmond, Ind., Item*. It is a good sign when all the coal dealers in a county do not fall over each other and cut prices to pieces for a chance to furnish a few tons of coal at a loss.

A five-foot vein of good coal has been struck 168 feet below the surface near Edwardsport, Ind.

Bellevue Coal Company, which operates the Bellevue coal mines in Haddon township, Sullivan County, Ind., has settled its financial troubles by floating a loan of \$25,000 on its property and will be ready at once to settle its outstanding obligations.

CAPITAL AND LABOR SIT SIDE BY SIDE

The Anthracite Conciliation Board and What It Has Accomplished—Composed of Three Representatives of the Mine Workers and Three of the Operators—Hears Complaints from Both Sides and Adjusts Differences.

To those who have been close students of the labor situation in the anthracite coal fields, one of the most significant features of the new agreement between mine workers and operators is the added prestige which it gives the Board of Conciliation. This tribunal has been in existence six years—since the Strike Commission made its award in 1903. When the renewed agreement has expired, the Board will have rounded out nine full years of service.

Its function has been to settle complaints made by either employees or employers. Often the six members decide in favor of the men or in favor of the companies, with little or no difference of opinion. Sometimes there is a tie vote and the case is referred to an umpire.

of the details. It was finally agreed, in 1906, to continue the Board just as it was first formed; now the same arrangement has been made for the next three years—until March 31, 1912.

As provided by the Commission's award, the Conciliation Board is composed of three representatives of the mine workers and three representatives of the operators. It examines witnesses and hears the arguments of both sides. When a decision is not reached the case under consideration is referred to an umpire appointed by one of the judges of the third judicial circuit of the United States.

Every employee who believes that he has been unjustly treated, and who has failed in his efforts to have the case



In any event strikes are forbidden under the agreement; if the mine workers at any colliery have "walked out," they go back to work before their grievances will be considered by the Board. In its practical aspects, this is one of the most important results of the whole system, for it has done away with the numerous petty strikes which were so damaging to the interests of both the men and their employers.

At first the Board was in the nature of an experiment. At the end of its first three years, however, the principle of conciliation had established itself so firmly that there was no question but that the scheme would be continued in its essential features. The only question was as to some

settled by the officials of the company at the colliery where he is employed, has the privilege of appealing to the Board for an adjustment. If his grievance is sustained he receives whatever advantage is due him by reason of the Board's decision. If it is not sustained, he remains at work with the satisfaction of having had a hearing before a body in whose membership the employers and employees are equally represented.

The effects of the Board's work are not of the kind that can be accurately measured, but they are plainly evident to the population of the anthracite region. The relations between the employers and their employes have probably never been so peaceful as during the last six years. The

very knowledge that an appeal to the Board is always easy tends to prevent the sort of bad feeling which was often present under the old regime.

The members of the Board representing the mine workers are John Fahy, of Shamokin, representing the southern district; John J. Waters, of Hazleton, representing the middle district, and Adam Ryscavage, of Scranton, representing the northern district. All these are officers of the United Mine Workers of America.

The operators' representatives are W. J. Richards, vice-president and general manager of the Philadelphia & Reading Coal & Iron Company, of Pottsville; S. D. Warriner, vice-president and general manager of the Lehigh Valley Coal Company, of Wilkes Barre, and W. L. Connell, an independent operator of Scranton, Pa.

All kinds of questions that arise in the complicated industry of anthracite mining come before the Board for settlement. The price of coal purchased by employees, the method of employing "check weighmen" and "check docking bosses," increases in pay under the Strike Commission's award, the refusal of employers to re-employ their former employees, alleged discrimination in favor of or against union or non-union mine workers—these are a few examples of the sort of questions the Board has to pass upon.

A fireman claims that he has not received the advantage of the Commission's ruling as to the number of hours of work per day; a group of mine workers allege that a certain company has refused to give them work because they took part in the strike; an engineer says he has been compelled to work extra time without extra pay; a company complains that its employees refused to work on a certain day, in order to attend a picnic; men doing chamber work seek to show that a change of system in loading coal has done them an injustice—so the list of grievances runs.

The rules of procedure aim at simplicity. The object is to do away with technicalities and "red tape" as far as possible, and get directly to the merits of every question. There is no fear of "costs," as there is in a regular court of justice, to deter a man of small means from making a complaint.

The rules provide that members of the Board in their respective districts shall endeavor to settle cases before they are presented as formal grievances for the action of the entire Board. The cases thus settled, by the members of the Board of Conciliation, in their respective districts, have probably been greater in number than all the formal cases settled by trial before the entire Board.

During the first three years of the Board's existence there were 150 grievances presented; during the second three years this number fell to 25. This was due, in a large measure, to the great number of cases settled in this way, without being laid formally before the Board.

The decrease in formal complaints is really the best indication of the success that the Board has had in fulfilling its purpose. This purpose, to use the words of the President of the United States in his letter of instructions to the Strike Commission in 1902, has been to "endeavor to establish the relations between the employers and the wage workers in the anthracite region on a just and permanent basis, and, as far as possible, do away with any cause for the recurrence of such difficulties as those which you have been called in to settle."

Friends of Fred B. Weeks, treasurer of the Bickett Coal & Coke Company, were recently surprised by the receipt of cards announcing his marriage. Mr. Weeks and Miss Alicia Gertrude McDowell, of Houghton, Mich., were married Wednesday morning at 10:30 o'clock by Rev. Herman Page at St. Paul's Episcopal church, Madison avenue and Fiftieth street, Chicago.

THE TURN IN THE TIDE.

The turn in the tide of the labor movement has set in, and it behooves every man of labor to gird on his armor and to yeoman work in the organizing of the yet unorganized, to go among the toilers and preach the gospel of united action, to make our unions attractive, not only to the organized, but also to the unorganized, to have them understand the magnificent results already achieved in the interest of all labor. Let our men of labor bring to their attention the wrongs endured and the rights yet to be achieved. Let every effort be made to establish a shorter workday—the eight hour day—and make it universal, for higher wages and better homes, better factory conditions, better and higher standards of life in every direction. It is now the imperative duty of every union man and sympathizer with the cause of labor to redouble his energy, loyalty and devotion for the great cause of the human uplift. This in memory of the sacrifices and achievements of those who have gone before us in the cause of labor and for the millions yet unborn who will profit by every improvement and advance in conditions made in our time—the touchstone of our achievements being organization, fraternity, solidarity and federation.—*Samuel Gompers in the American Federationist.*

PENNSYLVANIA MINE INSPECTORS.

Chief Mine Inspector James E. Roderick of Pennsylvania has announced the following appointments as state mine inspectors for the year beginning July 1st:

First district, Alex. McCanch, Monongahela; second district, C. B. Ross, Greensburg; third district, T. K. Adams, Mercer; fourth district, Elias Phillips, DuBois; fifth district, Isaac G. Roby, Uniontown; sixth district, T. D. Williams, Johnstown; seventh district, Arthur Neale, Crafton; eighth district, Joseph Knepper, Phillipsburg; ninth district, T. J. Walsh, Connellsville; tenth district, Joseph Williams, Altoona; eleventh district, Daniel Blower, Scottdale; twelfth district, Roger Hampson, Punxsutawney; thirteenth district, John T. Bell, Dravosburg; fourteenth district, David Young, Freeport; fifteenth district, Alex. Monteith, Patton; sixteenth district, William Howarth, Brownsville; seventeenth district, John I. Pratt, Pittsburgh; eighteenth district, Thomas Lowther, Tyrone; nineteenth district, Charles T. McGregor, Irwin; twentieth district, Nicholas Evans, Somerset; twenty-first district, F. W. Cunningham, California.

PENNSYLVANIA COAL MERCHANTS' ASSOCIATION.

Before the adjournment of their convention at Harrisburg, Pa., the Pennsylvania Retail Coal Merchants' Association adopted resolutions denouncing the practice of manufacturers selling coal to their employees at wholesale rates, and urging members to patronize shippers who refuse to sell furnace and stove coal to manufacturers, knowing it is for domestic use. Secretary Bertolet's report scored the jobbers who disregard the rights of the retail dealers.

Officers were elected as follows:

President—Samuel H. Crowell, Philadelphia.

Vice-President—C. J. Swarr, Lancaster.

Treasurer—C. Frank Williamson, Media.

Directors (three years each)—W. H. Kneas, Norristown; Roland Smedley, West Chester; Henry Palmer, Langhorne, and Ed. M. Phillips, Wilmington, Del.

Wellington M. Bertolet, of Reading, was re-elected secretary by the directors at a meeting following the adjournment of the association.

As guests of the Philadelphia & Reading Coal and Iron Company members of the association made a visit to the Gettysburg battlefield.

ILLINOIS COAL PRODUCTION 47,608,161 TONS

The Illinois State Geological Survey, Frank W. DeWolf, Acting Director, furnishes FUEL with the following interesting summary:

The production of coal in Illinois for 1908 was 47,608,161 tons, valued at \$49,936,159, according to statistics collected by the State Geological Survey and the U. S. Geological Survey in co-operation, and published in Circular No. 5, by R. S. Blatchley, of the former bureau. Since in 1907 the production amounted to 51,317,146 tons, valued at \$54,637,382, there was a decrease in tonnage and value of between 7% and 8%. A much larger decrease was felt by other coal producing states, due, of course, to the financial depression and decrease in manufacturing and transportation. The Illinois production fell off about 2,500,000 tons during the first six months of the year, and a little less than 1,500,000 tons for the remainder.

A considerable change took place in the rank of the largest producing counties. In 1908 sixteen counties exceeded a production of 1,000,000 tons, while eighteen counties passed this tonnage in 1907. Marion and Peoria counties fell below the million mark. In 1908 Franklin County occupied eighth place with a total of 2,187,383 tons, whereas in 1907 it ranked fifteenth, with an output of 1,306,966 tons. Bureau County, which ranked ninth in 1907, fell back to twelfth place, and lost nearly 500,000 tons. Other changes were not important.

Among the important occurrences of the year was the establishment of a station at Urbana to aid in the work of mine rescue, and to study mining wastes in Illinois. This is a sub-station of the Pittsburg plant of the U. S. Geological Survey, and it has already rendered efficient help in a number of explosions and fires in Illinois and Indiana. Very likely the attention centered on this work will result in the installation of co-operative rescue stations by groups of coal operators.

Counties producing over one million tons in 1908:

Order.	County.	District.	Tons.
1	Williamson	10	5,670,474
2	Sangamon	6	5,014,488
3	Macoupin	7	3,891,850
4	St. Clair	8	3,697,611
5	Madison	8	3,366,820
6	Saline	10	2,543,257
7	Vermilion	5	2,457,885
8	Franklin	8	2,187,383
9	Fulton	4	2,054,400
10	Perry	8	1,576,891
11	La Salle	1	1,557,172
12	Bureau	2	1,512,972
13	Montgomery	7	1,410,978
14	Christian	7	1,377,167
15	Grundy	1	1,081,443
16	Clinton	9	1,078,849

In 1907 the following counties exceeded the million ton mark:

Order.	County.	District.	Tons.
1	Williamson	10	5,697,944
2	Sangamon	6	5,160,042
3	St. Clair	8	4,511,879
4	Macoupin	7	4,507,270
5	Madison	8	3,927,721
6	Vermilion	5	2,973,253
7	Saline	10	2,247,842
8	Fulton	4	2,113,643

9	Bureau	2	2,010,762
10	Perry	9	1,784,469
11	La Salle	1	1,677,990
12	Christian	7	1,368,159
13	Grundy	1	1,327,321
14	Franklin	9	1,306,966
15	Clinton	9	1,302,391
16	Montgomery	7	1,289,021
17	Marion	9	1,185,533
18	Peoria	3	1,103,312

COAL IN MICHIGAN LAST YEAR.

The production of coal in Michigan in 1908 was 1,835,019 short tons, having a spot value of \$3,322,904, according to statistics collected by E. W. Parker, of the United States Geological Survey. The output in 1908 compared with that of 1907 showed a decrease of 200,839 short tons, or 9.87 per cent, in quantity, and of \$337,929, or 9.23 per cent, in value. Notwithstanding this decrease the tonnage reported for 1908 was larger than in any previous year in the history of the state except 1907. The coal production of Michigan in 1908 as compared with that of 1906 showed an increase of 488,681 short tons, or 36 per cent, and as compared with 1905, when the largest production previous to 1907 was recorded, the increase amounted to 361,808 short tons, or 25 per cent.

Although the output was more than 200,000 tons less than in 1907, the number of men employed in its production increased from 3,982 in 1907 to 4,247 in 1908, the depression in other lines of industry showing its effect in a surplus of labor available for coal mining. The average number of days worked, however, decreased from 234 in 1907 to 207 in 1908. The average production of each man employed decreased from 511 tons in 1907 to 432 tons in 1908. The operations during 1908 were almost entirely free from labor troubles, a strike at only one mine having been reported, by 300 men were idle sixteen days.

There were 120 mining machines in use, an increase of 17 over 1907. W. L. McLeod, Michigan commissioner of labor and industrial statistics, reports that in 1908 there were 106 accidents in the coal mines; 5 resulted fatally and 28 were of a serious character. No explosions of either dust or gas were reported. The death rate per 1,000 employes was 1.18, and the number of tons mined for each life lost was 367,004.

USE OF COAL CINDERS IN CORES.

In large cores, coal cinders, or sometimes small coke, is used to assist the venting of the cores. A large part of the middle of the core is dug out by the core maker. With a vent-rod he penetrates to every corner of the core, the ends of the vent holes so made all lead into the space dug out. This space is now filled with cinders or small coke, the former being preferable, being more porous. It is important that the cinders are dry. If they are wet they hinder the drying of the core. The cinders are covered over with sand, an opening being left by which the vent is led in the desired direction. The cinders in the space which was dug out act as a reservoir for the gases, and also help to getting out of the core when the casting is to be dressed or fettled.

New River Collieries Company, at Fayetteville, W. Va., has broken all previous records by mining over 67,000 tons of coal during the last month.

ITEMS FROM THE IOWA COAL FIELDS

A new coal mining company, to be known as the Boone Block Coal Company, has filed articles of incorporation in the county recorder's office at Boone, Ia. The company for the present is made up of Messrs. George Heaps, Robert Kennedy, Peter Benson and William Benson. The capital stock of the company is \$15,000, shares of which will be sold at \$100 each. Business commenced Tuesday, June 15th. The shaft of the mine is to be sunk at the spot where the drilling has been done, just north of the city. A fine showing of coal has been struck and the company is getting at the work with the experience of many years to back their efforts.

What will be the deepest and largest coal mine in the state will shortly be sunk by the Saylor Coal Company of Des Moines on its recently acquired field between High Bridge and Des Moines. The field was discovered only a short time ago and experiments have shown that it contains 2,000 acres of good coal from three and one-half to four and one-half feet in thickness. The work of sinking shafts and installing mining machinery will be started immediately. It has also been discovered that the vein has a good roof, insuring a minimum of accidents from cave-ins. When the shafts are sunk and the mine is ready for operation the company will construct from 150 to 200 houses for the use of its miners. The new camp will likewise lead all others in the state in point of size.

The North Iowa Coal Club, following the recent picnic at Clear Lake, elected as officers: S. J. Clausen, Clear Lake, president; George M. Prince, Mason City, vice-president; H. E. Watts, Clear Lake, secretary and treasurer.

The mule market at the Scandia Coal Company's mine, Woodward, Ia., is about to be partially destroyed by the installation of an electric motor to be used for hauling the coal out of the mine. The machine was received last week and the trolley wire for conveying the power is now being installed. The company expects to have the new motive power in operation soon. They already have a well-equipped electric power plant and on this account the work will be greatly facilitated. The use of mules in the mine will not altogether be dispensed with, but the burden of the work will be placed upon the electric locomotive.

E. C. Morris has just opened a coal mine on his place east of Oskaloosa, Ia. He will sell the coal on the local market.

The rumors of the new life that has come to the town of Beacon, Ia., were not without foundation. New work now under way by the Garfield Coal Company will give that town a new lease of life and guarantee its prosperity for a number of years if nothing else entered into the question of the growth and the betterment of the town. The Garfield Coal Company is to sink a new shaft northwest of Beacon upon a portion of its property and within a reasonable length of time will have work for about one hundred and fifty men who may find it to their advantage to reside in the town of Beacon. The Garfield Coal Company has a property that has been worked out, but which has a vein of splendid coal underlying the old first workings. The second vein is from three and a half to five feet in thickness and lies less than

one hundred feet below the surface and fifteen to twenty feet below the first vein. The present condition of the market makes the mining of this second vein possible and the company has decided to go forward and sink a shaft at once.

C. W. Durfee has resigned the superintendency of the Durfee mine at Bussey, Ia., and the directors have chosen as his successor C. A. Williams, who has been with the Canadian Pacific in their coal operations at Bankhead, Canada. Mr. Williams lives in Oskaloosa and has had large experience in the work.

A. E. Line, formerly identified with the Brown Coal Co., the National Coal & Supply Co. and the Warfield-Pratt-Howell Co., has been appointed manager of the Southern Coal Co. at Sioux City, Ia., and has taken up his new work.

ILLINOIS MINE INSPECTION DISTRICTS.

The following apportionment of mine inspection districts in Illinois has been made, effective July 1. The following arrangement of counties, number of mines, men and tons produced, is here printed correctly:

1st District—State mine inspector, Hector McAllister, Streator, Ill. Counties—Grundy, Kankakee, La Salle, Putnam and Will; 65 mines; 7,524 men employed; 3,383,364 tons of output.

2d District—State mine inspector, Thomas Hudson, Galva, Illinois. Counties—Bureau, Fulton, Henry, Knox, Mercer, Rock Island, Warren; 216 mines; 9,168 men employed; 4,515,424 tons of output.

3d District—State mine inspector, John Dunlop, Peoria, Illinois. Counties—Menard, Livingston, Logan, McLean, Marshall, Peoria, Stark, Tazewell, Woodford; mines, 179; men employed, 5,151; 2,792,486 tons of output.

4th District—State mine inspector, Thomas Weeks, Bloomington, Ill. Counties—Brown, Cass, Hancock, Schuyler, McDonough, Morgan, Sangamon, Scott; 68 mines; 7,336 men employed; 5,502,104 tons of output.

5th District—State mine inspector, Thomas Moses, Westville, Illinois. Counties—Christian, Edgar, Macon, Moultrie, Shelby, Vermilion; 65 mines; 6,556 men employed; 4,493,781 tons of output.

6th District—State mine inspector, James Taylor, Peoria, Illinois. Counties—Calhoun, Green, Jersey, Macoupin, Montgomery; 43 mines; 6,753 men employed; 5,625,204 tons of output.

7th District—State Mine Inspector, W. W. Williams, Litchfield, Ill. Counties—Bond, Clinton, Madison, Washington, Marion; 49 mines; 7,077 men employed; 5,870,767 tons of output.

8th District—State mine inspector, Walton Rutledge, Alton, Illinois. Counties—Randolph, St. Clair; 92 mines; 6,027 men employed; 5,190,966 tons of output.

9th District—State mine inspector, W. S. Burris, DuQuoin, Illinois. Counties—Franklin, Gallatin, Jefferson, Perry, Saline, Wabash, White; 73 mines; 7,747 men employed; 5,891,130 tons of output.

10th District—State mine inspector, Thomas Little, Murphysboro, Ill. Counties—Jackson, Johnson, Williamson; 72 mines; 7,502 men employed; 6,007,126 tons of output.

A 28-inch vein of coal has been struck in the heart of Colchester, Ill., and the mine is to be opened.

PETROLEUM AND GAS INDUSTRY OF ILLINOIS

By R. S. BLATCHLEY, State Geological Survey.

The following table shows the production of oil in Illinois from 1905 to 1908 by months:

Month.	Barrels. 1905.	Barrels. 1906.	Barrels. 1907.	Barrels. 1908.
January	55,680	781,812	2,640,065	
February	65,209	956,399	2,807,620	
March	19,352	1,547,323	2,734,617	
April	102,862	1,874,465	3,232,123	
May	267,746	2,138,918	3,227,522	
June	5,489	410,654	3,108,492	
July	9,208	610,401	2,722,683	
August	15,092	778,463	2,833,637	
September	19,591	722,168	2,698,577	
October	26,443	463,819	2,725,267	
November	34,766	350,985	2,499,092	
December	45,913	549,711	2,655,411	

Total..... 156,502 4,397,050 24,281,973 33,685,106

There was a continued increase in the production of oil in 1908 over previous years. The total runs for the year were 33,685,106 barrels, valued at \$22,648,881. This was an increase over 1907 of 9,403,133 barrels or 39 per cent. Had the pipe lines been able to receive the entire supply, the production could easily have reached 40,000,000 barrels. As a matter of fact, however, the output increased beyond the capacity of the pipe lines, which at one time during the summer were pumping over 102,000 barrels daily. Thus, production was discouraged and checked.

Review of the Years 1905 to 1908.

The total output of oil in Illinois up to the year 1902 was 6,576 barrels. This was limited to the heavy oil of the Litchfield pool which, during its period of activity from 1886 to 1902, never at any time produced a well of more than three or four barrels daily capacity. In 1905, the Eastern Illinois field was tapped at Casey and from this time up to the present date the most notable increase of Illinois mineral products has been that of petroleum.

During 1905 there was shipped by tank cars, 156,502 barrels of oil at an approximate value of \$116,561. In 1906, an excited rush to the field took place and the rapid development spread to the south of Casey as far as Robinson in Crawford county. This brought in a production of 4,397,050 barrels, with a value of \$3,275,802, which raised Illinois to ninth place among petroleum producing states. This production was an increase over 1905 of 4,240,548 barrels or 2,700 per cent. During this same year, pipe lines were extended into the field and the production was further aided by a quick relief of surplus tankage on the surface. In 1907, the development reached to the south of Robinson and to the deeper fields around Bridgeport in Lawrence county, where the sands were more constant in production. In this territory wells came in as high as 700 to 2,000 barrels on initial tapping and dropped in a week or two to 150, 300 barrels of steady yield. With the introduction of more pipe lines, the production in 1907 reached 24,281,973 barrels, with a value of \$16,432,947. This was an increase in output over 1906 of 19,884,923 barrels or 452 per cent. Thus Illinois jumped from ninth place in 1906 to third in rank of oil producing states in 1907, Oklahoma and California being first and second.

The eminent success of the main Illinois field has stimu-

lated drilling in various parts of Illinois, the main attention being given to the southern counties. This is due to the hope of finding pools in the same horizons as those of eastern Illinois, which seem to have a southwestern dip and then a gradual rise until the oil bearing formations outcrop to the south and west. As yet no pool of significance has been established. Oil has been found, however, around Sparta, Centralia, Sandoval and Litchfield.

Natural Gas.

During the early stages of the oil development all gas available was used for drilling and pumping purposes in the field. In 1907 petroleum gases came into the market and a production valued at \$143,577 was reported. In 1908 the value was \$270,360. This was an increase over 1907 of \$126,783 or 88.3 per cent. Of the 1908 production \$257,046 was for natural gas from oil bearing sands. The balance of \$13,314 was for a gas found in the surface formations or drift. This is a "marsh gas," which is colorless and odorless, and is found with lower pressure than that of the petroleum gases.

The petroleum and gas of the main Illinois fields are secured from various horizons found at varying depths from Casey southward. All the sands with the exception of the Kirkwood and deep sand of Bridgeport are found in the Pennsylvanian group of rocks. The Kirkwood and lower sand occur in the Mississippian in the Chester group. This seems to be characterized by three successive layers of limestone and shale followed by a thin layer of "Red Rock" or red shale and at the base of which is the oil bearing sand. This lower sand is prolific and seems to bear a more uniform grade of oil, in a steadier flow than the upper sands.

Above the Chester group and below the producing coal beds are found a series of conglomerates, sandstones and gritty shales that comprise the Pottsville formation. In this series there is found at an approximate depth of 1,350 to 1,450 feet an oil bearing sand called the Buchanan. The sand breaks at various points into two defined lens, each being more or less productive, but not to the degree of the upper sands. The Bridgeport, Robinson and Duncanville sands, all carrying three or more lens and lying at about the same horizon, belong to the base of the overlying coal measures. The remaining sands found at higher depths between Casey and Robinson belong to the top of the lower coal measures and bottom of the upper series of the same group.

It was not until recently that the lower sands, presumably the Kirkwood and a stray sand above it, were found in the vicinity of Robinson. This discovery is creating new life and a possible enlargement of the capacity of the field.

COAL SEGREGATION EXPECTED.

From one of the most conservative and responsible banking institutions in Wall street the statement came a few days ago that a comprehensive plan is being prepared for the segregation of the anthracite coal railroad holdings of coal properties into one colossal company. The plan is to be perfected and held in abeyance against expected legislation by congress along the lines of the recent Hepburn law, the commodity clause of which has recently been passed upon by the Supreme court.

PERSONAL

R. L. Baker, who has been recently connected with the Department of Experimental Engineering, and who is also a graduate of the University of Wisconsin, has entered the services of A. Bement, Consulting Engineer, Fisher Building, Chicago, Ill.

* * *

The Arapahoe Club is a social organization in which many prominent coal men and others are interested, and its inherent strength is proven by the fact that the recent annual encampment at Ravinia Park was the twenty-seventh. The members and fortunate invited guests are accompanied on these excursions by the other members of their families and there is always a delightful time. The outing was held this year on Sunday, June 27th, and was a great success. John Connery is president, John C. Schubert, secretary, and P. O'Connor, big chief.

* * *

A. M. Anker, who for more than twelve years was employed with the Dering Coal Company's district offices in Danville, Ill., and more recently became connected with the Brazil block company when the latter leased the Dering properties, has resigned and taken a position with the new Corn Belt Insurance Company at Danville. He was succeeded by Harry Dodge from the Dering company's offices at Chicago.

* * *

Charles Minshall, of Terre Haute, and Jacob Baur, of Chicago, have purchased the Crawford interest in the Parke County Coal Company and have already begun the work of repairing the mines and getting them in readiness for operation. The mines are in the vicinity of Rosedale and have not been working steadily for the past two years.

* * *

J. F. Welborn, president of the Colorado Fuel and Iron Company, has been called East to confer with the interests in control of the company. Mr. Welborn is to be re-elected president of the company at the annual meeting next October, in spite of the fact that the Gould interests, which were instrumental in having him placed at the head of the company, will likely retire from the board, except for a small representation by probably one director.

* * *

George W. Hall, aged 59, formerly collector of internal revenue, and in recent years interested in coal lands in southern Ohio, died of apoplexy at his home in Toledo, O. He was prominent in Ohio politics.

* * *

James Leichty, of Danville, Ill., is now general manager of the Rend mines in southern Illinois. Leichty came to Danville from the anthracite coal fields of Pennsylvania, where he worked when a boy as a trapper, about twenty years ago, and in that time has risen from the most humble position in a coal mine. He obtained employment as a trapper boy with the late Michael Kelly, who later became the largest coal operator in the Danville district. Mr. Kelly took a great fancy to the friendless boy and this friendship between employer and employe grew stronger as the years went by and lasted until Mr. Kelly's death a few years ago. He has had other positions, one with the Dering company. There is a romance connected with Mr. Leichty's life that is known to only a few of his closest friends. He could not read or write when he came to Danville, but in the family with whom he boarded there was a school teacher who took considerable interest in the young man and volunteered to teach him reading and writing during her spare

moments. He seldom missed a day in the mines, but was never too tired to study his lessons at night, and, while studying, he became quite proficient in another art, that of making love to his charming teacher, and as soon as he was able to furnish a home they were married.

* * *

Perry Barker, M. S., member American Chemical Society, recently assistant engineer, United States Geological Survey, at Fuel Testing Plants, St. Louis and Jomestown, and later at Experimental Gas Plant, Ann Arbor, in charge of tests of gas coals, has been made assistant chemical engineer on the staff of the Fuel Engineering Department of the Arthur D. Little Laboratory of Engineering Chemistry, Boston, Mass. Mr. Barker, who is a graduate in chemical engineering of the University of Illinois, was formerly chemist to the Peabody Coal Co., Chicago, and research chemist at the Illinois State Engineering Experiment Station.

FOUR YEARS' MINERAL PRODUCTION IN ILLINOIS.

Below a table is given showing the value of mineral products in Illinois from the years 1905 to 1908:

	1905.	1906.	1907.	1908.
Coal	\$40,577,592	\$ 44,763,062	\$ 34,687,382	\$ 49,936,159
Pig iron (estimated)	37,040,000	47,128,000	52,229,000	30,135,000
Petroleum	116,561	16,432,818	16,432,818	22,648,881
Clay	12,462,196	12,762,453	13,229,489	11,340,056
Zinc (estimated) .....	.....	5,499,508	6,614,608	3,928,792
Limestone	3,511,852	2,942,331	3,774,346	3,122,572
Portland cement	1,741,150	2,461,494	2,632,576	2,707,044
Sand and gravel	693,772	1,043,041	1,367,653	1,533,020
Lime	421,589	584,118	559,305	393,951
Natural gas	7,223	87,211	143,577	279,360
Fluorspar	220,246	160,623	141,971	192,179
Mineral water	47,995	77,287	91,760	58,901
Lead ore (estimated)	48,000	65,208	61,628	24,778
Silver or Tripoli	29,153	10,125	14,996	17,884
Sandstone .....	.....	.....	1,900	12,218
Silver (estimated) .....	.....	.....	.....	1,356
Natural and slag cement	166,555	188,262	174,282	.....
Pyrite .....	.....	.....	5,700	.....
*Other products	2,510,215	5,643,869	67,164	2,033,760
Total	\$99,614,059	\$126,653,410	\$152,221,284	\$130,776,694
Comparative values since 1905, including pig iron and spelter .....	.....	27.1%	20.2%	14.2%
Loss, per cent .....	.....	.....	.....	.....
Excluding pig iron and spelter	\$62,374,059	\$ 74,027,902	\$ 93,877,676	\$ 94,512,902
Gain, per cent .....	.....	14.2%	26.1%	1.2%

*Includes in 1905. Coke with by-products and sand lime brick.

*Includes in 1906. Coke with by-products alum and aluminum sulphate, infusorial earth, sand lime brick, Venetian red, and white lead.

*Includes in 1906. Coke with byproducts alum and aluminum umber, and sand lime brick.

*Includes in 1908. Coke and by-products, pyrite, sand lime brick and natural cement.

LOOKING TO FUTURE CAR SUPPLY.

Coal operators in the soft coal fields of Maryland, West Virginia and Pennsylvania report a steady growth in this trade. There is nothing in the nature of a "boom" on, but the inquiry from manufacturing centers shows a daily increase. This the operators regard as a more desirable indication than if the orders came with a rush. It gives them opportunity to meet requirements as they arise, and it also gives the transportation companies a chance to catch up with the needs at the mines. What the operators particularly desire is that the railroads shall fully equip themselves with cars and locomotives when the demand does become urgent and abnormal. This was the difficulty which the mine owners, as well as the railroads, faced in the busy period of 1904, 1905 and 1906. The coal was available, the demand for it prevailed, but the railroads were unable to supply all the equipment needed to move it promptly. That future emergencies of this kind will be met is now the aim of the transportation companies as well as the mine operators.

The American Coal Products Company has declared the usual quarterly dividend of $1\frac{3}{8}$ per cent, payable July 5.

TRANSPORTATION OF INFLAMMABLES AND ACIDS

As a further step toward adding to the safety of railroad operations, the lines comprising the American Railway Association, and operating 246,172 miles of line in the United States, Canada and Mexico, beginning July 1st, put into effect revised rules for the transportation of inflammable articles and acids. These are complementary to the rules of the Interstate Commerce Commission, effective April 13, 1909, for the transportation of explosives. The Pennsylvania Railroad Company has had three rules printed and distributed, with instructions that every employe concerned must obtain a copy of them, and be governed accordingly.

These regulations for the transportation of dangerous articles have been formulated by Col. B. W. Dunn; U. S. A., Chief Inspector of the Bureau for the Safe Transportation of Explosives for the American Railway Association, and are based upon an act of Congress approved May 30, 1908; they are designed to emphasize the dual responsibility, in the interest of public safety, that rests upon the shipper and the carrier. The particular purpose is that the shipper shall know the true characteristics of his shipment, and familiarize himself with the requirements of the regulations in order that he may inform the carrier by use of prescribed certificates and labels.

The importance of the regulations may be realized from the fact that there are in this country more than 150 factories, the combined product of which in the course of a year is over 500,000,000 pounds of explosives. In 1906 a single railroad transported over 91,000,000 pounds of explosives, and used for this purpose 19,000 cars. Since the bureau referred to began its operations, there has been very little trouble from the transportation of explosives in the United States, and it is believed that when the work of the bureau has been fully developed, the danger from this source will have been reduced to a minimum.

The thoroughness with which this campaign for safety has been pursued may be indicated by the fact that special supervision is given not only to the transportation of powder, dynamite and other heavy explosives, but it is now provided that special cars shall be pursued in the handling of any material that gives off inflammable vapor at or below a temperature of 80 degrees Fahrenheit; materials subject to spontaneous combustion; materials other than acids that are liable to cause accidents by friction, concussion, absorption of moisture, contact with organic matter and otherwise. Special rules also govern the handling of compressed gases of liquids, as well as a list of eight of the more virulent acids and corrosive compounds.

Illustrative of the detailed care with which the various rules have been formulated to govern the packing of different articles, are the following regulations:

Nitro-Cellulose wet with solvent must contain not less than 30 per cent of a solvent whose flash point is not less than 40 degrees Fahrenheit; and must be packed in strong, tinned or galvanized iron vessels, of the milk can type, with a satisfactory means for keeping them securely closed.

Metallic Sodium or Potassium, in quantity not greater than one pound, must be placed in neutral oil, and this in a well-stoppered bottle protected by a tin box, or these substances may be packed in a hermetically sealed tin cylinder.

Friction Matches must be packed in pasteboard, wooden, or metallic boxes, containing not more than 1,000 matches each; if packed loosely, or with heads

lying in all directions, not to exceed 2,000 matches may be packed in one carton or inside package; the inside packages must be packed in strong outside cases, plainly marked "Friction Matches."

It is stipulated that every article of a hazardous character when offered for shipment must bear a prescribed label to indicate to the railroad employes the method of handling. For example, to cases holding inflammable liquids, shippers must attach a red label containing the following legend:

"Notice to employes: Caution, keep away from fire, stoves, radiators, lighted matches, lanterns and direct sunlight. Any leaking packages must be removed to a safe place. Shipper has certified on his shipping order to compliance with all regulations that apply to this package."

For inflammables generally, there is a yellow label with the following instructions:

"Notice to railway employes: Caution, keep fire and light away, sweep up and remove carefully contents of broken packages. Shipper has certified on his shipping order to compliance with all regulations that apply to this package."

TO SPEND \$600,000 AT MARIANNA.

The Pittsburg-Buffalo Company has plans completed and proposals out for an expenditure of between \$500,000 and \$600,000 in new construction work and equipment at the Marianna mines. Contracts will be closed shortly for the purchase of 20 air locomotives, and the compressors to operate them. Bids are advertised for the erection of 100 double eight and ten-room houses; 25 three-room houses and 25 five-room houses at Marianna, which must be in by July 1. Bids also will be taken for a large store building, and a big brick bath-house for the miners near the entrance of the larger shaft; while a steel tippie and a machine shop are among the other structures for which proposals are asked. The company is preparing to house 1,000 more people at Marianna by fall.

PENNSYLVANIA SCHOOL OF MINES.

The School of Mines of the University of Pennsylvania has made arrangements to open a real coal mine on the school property at Pittsburg. The work will be superintended by engineers of the Pittsburg Coal Company, it is said. When they reach the coal it will be worked by the students as a part of their regular course. Also it is expected that they will get enough coal to supply the buildings of the school.

WESTERN RAILROADS AND THEIR COAL MINES.

It is said in circles supposed to know that the investigation of the relations of western railroads to the coal mines along their lines will be brought west about the middle of July. The points at which the hearing will be had have not been announced, nor the names of the witnesses—the latter for obvious reasons. It is said that none of the railroads in the western states own coal mines any more, so that the exact line of inquiry is only a matter for surmise.

The Pittsburg Coal Company will locate their only coaling station on the St. Mary's river at Sault Ste. Marie. This means for the present at least that all of the coal formerly handled at their fueling station at Point aux Frene will be handled by the Port Royal Dock there.

COAL FIELDS IN THE CANADIAN ROCKIES

Recent surveys and estimates of the Canadian north-western coal field show that the territory which embraces the Crows Nest Pass coal field is divided into two nearly equal parts by the Alberta-British Columbia boundary line, which follows the summit of the Rocky Mountains from southeast to northwest. The eastern half is mostly prairie, after the foothills of the mountains are left, but the territory to the west of the summit is much rougher as far west as the Kootenai River, which flows at the western foot of the Rockies.

The coal field as now known to exist extends from the Elk River on the west to the foothills on the east of the mountains, and from Morrissey, nine miles south of Fernie, on the south to Bankhead, near Banff on the north. A straight line drawn from Morrissey easterly for 35 miles would reach the eastern extremity of the coal field as now established.

According to authentic reports made by Dr. Dawson and James McEvoy, of the Canadian geological department, the coal beds as measured at Morrissey comprise a total thickness of more than 200 feet, distributed in layers of from a few inches in thickness to 30 feet. These seams are interspersed through a stratum of rock, shale and slate, which, with coal seams, form a total of 4,736 feet. Of this total of more than 200 feet of coal, Mr. McEvoy estimates that more than 100 feet is workable and marketable coal. In this calculation he takes no account of coal seams of less than three feet in thickness. Since these reports have been made explorations and developments up the Elk River have demonstrated that these measures extend at least 75 miles to north of Morrissey, and as nearly as can be determined, they hold their relative positions and maintain their thickness and quality.

The thickness of the strata through which they are distributed, however, seems to diminish to the north and east, being reported as totaling 175 feet of coal in a stratum of 1,169 feet of slate, shale and sandstone. A single seam of coal 30 feet, more or less, in thickness has been located in this field at Morrissey, Coal Creek, six miles east of Fernie, at Hosmer, at Michel, at Corbins Camp, 20 miles south of Michel, at a point 75 miles north of Fernie, on the Elk River, and at Cat Mountain, on the east side of the Rockies, at a point where the Livingston River cuts through the range of the same name.

Other seams of 10, 15 and 17 feet in thickness have also been traced at these different points, and, though correlating in such a disturbed territory would be almost impossible, the facts indicate a continuance of the same field over all the intervening territory.

The tremendous upheaval which formed the backbone of the continent greatly disturbed the coal beds, standing them in positions ranging from a pitch of a few degrees to an almost perpendicular position. At Frank, in Alberta, the lime rock has been pushed entirely through the coal beds and at Banff the coal seams are found between strata of lime rocks, indicating still greater disturbance.

Mr. McEvoy has estimated that there is more than 20,000,000,000 tons of marketable coal in the field. But later developments have demonstrated that the extent of the field is much greater than at first reported, so that the estimate of the coal territory may safely be doubled, giving the probable tonnage as well beyond 45,000,000,000. It is beyond doubt the most extensive field of coal in western North America, and lying as it does at the western edge of a vast territory of prairie lands, extending from Winnipeg to the

Rocky Mountains and across their summit into the Pacific coast territory, accessible to the important cities and ports of the northwestern states, it is destined to play an important part in the economic and industrial development of a great territory lying upon both sides of the international boundary, and extending from Winnipeg on the east to Portland on the west.

The quality of the coal is bituminous generally, but at Bankhead, near Banff, a fairly good quality of anthracite has been mined, and at Morrissey a quality approaching semi-anthracite is found. The bituminous coal, especially in the Fernie district, produces a good quality of coke, which, with improved methods of manufacturing, will equal, commercially, the coke produced in any other American field.

Consul John E. Kehl, of Sydney, furnishes the following information concerning American coal in the St. Lawrence markets and the proposed efforts for its exclusion:

"In the early part of February I mentioned in a report that American coals were being sent to St. Lawrence markets in close competition with the Nova Scotian collieries, and that the largest colliery in Canada, the Dominion Coal Co. (Limited), of Glace Bay, was forced to operate on less than half time during certain months of 1908 owing to American competition. In further reference to this matter I attach a special dispatch from Halifax to the Sydney Daily Post:

"A gathering of representatives of the coal-mine owners of Nova Scotia is here awaiting the arrival of the mail steamer Tunisian on which Hon. W. S. Fielding is a passenger from England. American coal, largely in the form of culm, is said to have been displacing to a considerable extent through this province and in the St. Lawrence markets the local product, and the mine owners profess to be somewhat alarmed. The mine representatives propose asking the minister of finance, when they interview him in Halifax, to increase the duty so as to exclude the American article. There has been some agitation for a removal of the duty, which ranges from 10 to 53 cents on the short ton of 2,000 pounds, and it applies only to soft coal. This request comes on top of an agitation—which, however, has not been very general—for a removal of the duty altogether. The proposed request to Hon. W. S. Fielding is, therefore, especially significant. The Tunisian is due tomorrow afternoon."

CANADIAN RETAIL COAL ASSOCIATION.

Nearly 200 attended the fifth annual convention of the Canadian Retail Coal Association in Buffalo, N. Y., June 23d and 24th. A trip to Crystal Beach was the outing feature tendered by the local coal men. Among the addresses made to the convention were: "Organization and Cost of Doing Business from a Retailer's Standpoint," by John M. Daly of London, Ont.; "Short-Weight Claims on Carload Shipments," by John C. Hay of Listowell, Ont.

There were interesting annual reports from President William Heaman of London, Ont.; Vice-President J. M. Peregrine of Hamilton, and Secretary-Treasurer E. M. Throwern of Toronto.

These three gentlemen were re-elected to their several offices.

There is another report that coal has been discovered in Minnesota, this time in Clay county.

EUROPEAN COAL MINES

An Address Delivered Before the Coal Mining Institute of America, at Punxsutawney, Pennsylvania, June 29, 1909,
by J. W. PAUL, Mining Engineer, Technologic Branch United States Geological Survey,
in Charge of Mine Lighting Investigations and Rescue Work.

The subject, European Coal Mines, is one upon which many volumes have been written, many official reports made and which has been the occasion upon which Royal Commissions have made many inquiries. Schools, universities, mining institutes, technical societies, testing stations, indemnifying and protective associations in Europe are a few of the institutions resulting directly from the coal industry.

It goes without saying that European mines are much older than mines in our country, and their exploitation has been made largely by native labor, representative of the integral society which furnishes the foundation for their laws and governmental policies with respect to protective measures for all classes of labor, especially mining. It is not my purpose on this occasion to go into an elaboration covering all the important aspects of the mines in Europe. To do so would necessarily make this paper a lengthy one and I fear somewhat tiresome. Again, the writer has some timidity in endeavoring to enter into a discussion of some important conditions affecting mine safety which have been matters of experimentation and discussion in Europe for the past thirty years.

The first duty of a government is to protect its citizens against all enemies which may cause injury by disease, accident, impairment of health or by attack of foreign foes. All forms of protective measures entail a pecuniary tax upon the citizens of the government, whether the protection be for naval or military work, prevention of disease or accidents.

In the coal producing countries of Europe, special importance has been given to the adoption of measures which have for their purpose the minimizing of accidents of all classes within mines. These protective measures are the result of many years' study of the conditions under which different classes of accidents occur and the adoption of practical methods for their prevention. In most cases the adoption of precautionary methods have added to the cost of the production of coal, but by doing so, additional people find employment and the accident list is materially reduced.

The question of discipline within the mines of Europe is frequently mentioned as one of the factors of safety which we have in far less degree in this country. In a large measure the discipline in European mines has been the outcome of many years of training the miners to recognize dangerous conditions. This discipline does not approach the perfection obtained in the military organizations, but it is obtained in the same manner as in a military organization by having a sufficient number of experienced and trained mine captains, foremen and bosses to frequently see each man while at his work and direct him to the proper safety precautions to be observed should any dangerous conditions arise. Such supervision of the mine work necessarily involves additional cost on each ton of coal which the people and the industries of the country seem willing to pay.

In matters of statutory requirements and state or governmental inspection, the European laws are largely in the hands of government officials who have authority to interpret the laws and promulgate regulations relative to their

proper enforcement. The inspectors, in general, have much authority in preventing dangerous practices and in some countries they may use their discretion in preventing the use of all types of explosives within mines. With reference to the installation of mine plants, the equipment and buildings as a rule are quite elaborate and constructed along lines of permanency, being mostly of fireproof material, a building practice quite in harmony with the regulations requiring all classes of buildings to be made of incombustible material.

Mine fires in European mines have in the past been the cause of loss of life and in England and Germany, they have resulted in the taking of many lives. Notably in Germany, at much expense, elaborate fire fighting facilities are provided, resembling in every particular a well appointed fire brigade station such as is maintained by some of our cities, having fire engines, horses and a crew of trained men. For underground work of rescuing miners and combating fires, many stations are equipped with different types of rescue apparatus and men trained in their use.

In Austria a law requires that each mine shall be equipped with rescue apparatus and at all times a certain percentage of the underground employes shall be trained in the proper use of the apparatus.

In France, a similar law is going into effect and in Belgium, after Just 1st, next, the collieries will be required to be equipped with the apparatus.

In Germany, many rescue apparatus are kept at the mines and at central stations where men are trained in the use of the apparatus.

In England, Scotland and Wales mine rescue stations are established and miners are being regularly trained.

Rescue apparatus in Europe appear to have passed the experimental stage, since in three of the important mining countries their use is required by law. In Europe there has been much saving of life through the benefits derived from the several explosives testing stations where experiments have been conducted upon mine gases, coal dust and explosives. In the countries of Great Britain, Belgium, Germany, France, Austria and Russia the mine inspection departments, the operators and manufacturers of explosives have for their guidance the results of tests made at their explosives testing stations, and operators of mines are restricted to the use of certain types of explosives, while in Belgium and Austria certain classes of mines are prohibited from using explosives for any purpose within the mine.

As early as 1883 a station was constructed at Zwickau, Saxony, for the study of the effect of explosives when discharged in the presence of explosive gas and coal dust. Since this was inaugurated the other stations in the different parts of Europe have been installed and in Bohemia a station is installed underground, utilizing an entry in tunnel which was excavated about the year 1800. None of the foreign experimenters have as yet arrived at an acceptable explanation of the phenomenon of a coal dust explosion, although at all of the foreign stations coal dust explosions are produced without the admixture of explosive gas. In those mines in Europe in which explosives are used for blasting the coal or rock, much attention is given to the condition of the part of the mine where a shot is to be fired

with respect to the presence of coal dust and its condition as to moisture.

Watering of the workings of the mines is practiced systematically, being applied by specially constructed cars, by hose and nozzle and by spraying devices. Much faith appears to be entertained in the wetting of the sides and floor at and within a certain minimum radius of the point at which an explosive is to be fired. Experiments are in progress in England and Austria to determine the retarding of an explosion by the introduction in different parts of a mine of wet zones, inert zones and dustless zones.

European countries are fully alive in a concerted endeavor to ascertain what additional safeguards may further curtail the loss of life and personal injury within mines. Not being fully satisfied with the results already obtained, new and more elaborate testing stations are in contemplation in at least three of the European countries.

The safety lamps in use in the European mines and the manner of handling them are worthy of comment. In England the lamps are carefully inspected before being taken into the pits and upon reaching the bottom of the pit, a mine official makes a careful inspection of the lamp to see that it is in good condition. It is forbidden to set a safety lamp on its bottom in any part of the mine. When a workman wishes to place his lamp to one side, he must hang it in a safe position.

In Belgium the lamps are looked over by an official on the outside of the mine to see that all of its parts are properly assembled, no test being made of the lamp to determine if it is defective.

In Germany the lamps are cleaned and locked and

handed to the miners, who examine them to ascertain if they are in condition suitable for use. In Germany all safety lamps are without bonnets to enable the miner to observe the condition of the gauze.

In Continental Europe at many of the gaseous mines, each workman is his own fire boss or gas tester—that is, he tests his working place for the presence of explosive gas, and if found, reports it to the proper official. In this particular much reliance is placed in the competency of each of the underground men. A station of much interest is to be seen within the Nordbahn mine at Maehrisch-Austrau, where retreating chamber is provided capable of accommodating three hundred men. This station is about a mile from the bottom of the shaft and is so arranged that it may be closed with heavy doors and isolated from the atmosphere of the mine. Food, water, ventilation, light, telephones, rescue apparatus and medicines are provided. In case of a mine fire or an explosion in any part of the mine which might prevent the escape of any living miner, they may retire to this station and remain until rescued. With the rescue apparatus in the underground station the men may do much effective work in combatting the fire or recovering miners who may be in irrespirable air and unable without assistance to reach the retreating gallery. This station is another evidence of the aggressive efforts being made to further reduce loss of life in Europe.

Of recent months it is not uncommon to learn of American mining officials traveling Europe making a study of the conditions pertaining to the safeguarding of life, so that it appears that we are beginning to realize that some of the practices in Europe may, with much profit, be adopted in the operation of our own mines.

NOTES FROM THE INDUSTRY IN ILLINOIS

Coal Mines of Fulton County.

J. E. Anderson, county mine inspector of Fulton County, Ill., has prepared his annual report. Among other things it shows that during the year ending June 1, the number of shipping mines in Fulton county was 25, the number of miners 3,240, and the tons of coal mined were 2,059,492. The aggregate value of the mines is \$2,348,074. There are 98 local mines in the county and in them 60,434 tons were mined. The value of these mines is \$92,978. The number of shipping mines and men employed in various parts of the county is as follows:

Farmington, five mines and 84 men; Norris, one mine and 270 men; Middle Grove, one mine and 22 men; Brereton, one mine and 330 men; Canton, three mines and 401 men; Dunfermline, one mine and 230 men; St. David, one mine and 380 men; Cuba, five mines and 542 men; Fiatt, one mine and 60 men; Parrville, two mines and 10 men; Ellisville, one mine and 61 men; Astoria, one mine and 46 men; Breeds, two mines and 17 men.

A Knotty Case Disposed Of.

The supreme court has denied the motion for a new trial in the damage suit of Carter Bros., of Danville, Ill., coal mine operators, etc., vs. the Big Four Railroad company, which has been in court for three years. This is the case which Judge Kimbrough said contained perhaps more knotty legal points than any other action that had ever come to his attention here. There were several problems to be considered, one of which was whether or not a leasehold has any real value. The lawyers for the railroad took the position that a leasehold might be valueless and it might be

worth something—no one knows who is not a forecaster of events. Carter Bros. had leased from the Consolidated Coal Co. a mine near Vermilion Heights. In building the new road from the main line through Tilton, the company damaged the entrance to the mine—practically ruined the plant for the time being. Finally restitution was made and a contract entered into and the alleged violation of the compact was the cause of the litigation. Several persons swore that the leasehold was practically worthless; others testified that it was valuable. Testimony on a number of other points was as contradictory, and this gave rise to the remark of the judge, Carter Bros. sued for \$10,000 and received a verdict for \$1,500 little more than a year ago. The railroad company appealed to the appellate, then to the supreme court, the judgment of the lower court being affirmed in both instances.

The Old Kelly No. 3 Mine.

According to the belief of a large number of miners of this place old No. 3 Kelly, southwest of here, is one of the best mines in the district. They assert that there is more coal in this mine than in any of the other Kelly properties, which is doubtless the result of it having been idle for the past four years. The mine was formerly one of the best in this district, but because of some local difference was closed down and has never been reopened. It is in bad condition as a result of disuse, but practical miners assert that it is not nearly so bad as would naturally be supposed and an expert miner made the statement a few days ago that it could be opened up and put in excellent shape for the sum of \$1,000. Therefore, there is a general belief here

that at some time the mine will be reopened and work resumed.

Better Railroad Business Expected.

Railroads in Illinois anticipate a decided pickup in freight business within the next few weeks. Hope for the increase in the rougher traffic is based on the belief that many big manufacturing concerns soon will make contracts for summer hauling of coal. Orders already in the hands of freight officials prompt the belief that the expected business will materialize. Local officials receive information daily which bodes a better freight outlook for the immediate future. The business has not been up to normal in recent weeks and the revival will come as a very much needed aid to the roads in keeping their earnings near a par. It is the belief that in the event the heavy coal business becomes a reality, this section of Illinois will contribute an unusually large per cent of the output.

The Minonk, Ill., coal miners are out on a strike because the Minonk Coal Co. refuses to fire Gilbert Sullivan. The miners claim that the coal company management allows Sullivan to do union work and that he is not a union man. Neither side seems disposed to give in and the strike may last until fall.

Henry C. Luehrs and sons, Harry and George Luehrs, have purchased the retail coal business conducted by J. Frank McGrew for the past 18 years, at Kankakee, Ill., and

assumed possession the first of July. Mr. Luehrs took charge of the retail business, resigning his position with the Kankakee Tile & Brick Company, in whose employ he has served continuously for the past 30 years, and Mr. McGrew will retain his wholesale interests. The new firm will be known as H. C. Luehrs & Sons.

The parties who are drilling for oil on the John Goodwine farm near Potomac, Ill., have reached a depth of about 1,300 feet, but as yet have discovered no evidences of oil. They expect to go 1,600 feet before the well is abandoned. While no oil has been discovered, they have struck a three-foot vein of coal.

Drillers have struck a seven-foot vein of coal on a farm south of Pana, Ill.

A twelve-foot vein of coal has been found 280 feet below the surface on the Woodbury farm, northwest of Danville, Ill. The coal is extra hard and options are being taken on the surrounding farms.

The Weeks Coal Company will erect a new office building in Sterling, Ill. The company has three of the largest coal sheds in the city. Alfred Weeks is in charge of the business.

The Witt mine at Paris, Ill., is to be operated again, being cleaned and having the water pumped out. The four-foot vein is being worked, but there is a six-foot vein lower down.

Charles Kaesebier has closed down his mine at Lincoln, Ill., which has never proved a profitable venture.

The Bushing Bros., mine operators of Terre Haute, Ind., have leased the Muncie, Ill., coal mine for five years and a large force of men are at work putting it in shape for a good run.

The W. P. Rend Coal & Coke Company at Rendville, three and a half miles northwest of Herrin, Ill., is making extensive improvements at the mine. A fine steel tippie is being constructed and will be ready for use within a short time. A 14-room hotel, a schoolhouse and some nice dwellings are to be constructed.

Wm. E. Galford has been employed as traveling representative of the Middletown, Ill., Coal Co., soliciting business.


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KANSAS MINERS IDLE: CHECK-OFF WAS SUSPENDED

Coal miners in the Osage district of Kansas are idle as a result of a series of misunderstandings with the coal operators culminating in the suspension of the check-off by the mine owners. The trouble really began some time ago, and seems to be the result of the overbearing tactics of the district president, Alex. Howatt. Last fall an effort was made by National President Lewis to put the men back to work after they had been called out by Howatt on account of a dispute concerning pay for deficient work. Howatt pointedly invited Lewis to go at once to a locality hotter even than Kansas in the dry season, and said he would run affairs in Kansas as he saw fit. Meetings have been held at different times between the coal operators and the miners, between Commissioner Bennett Brown and Howatt, and afterwards between Commissioner Ryan and Howatt, but without result.

The operators took the position that the original strike had been called without cause and in violation of the rules which required an attempt first to settle the matters in dispute, and that they would do nothing until the men returned to work. To their demand that the men go back to work pending negotiations Howatt's reply was: "If you will assure me that the miners will get what they want, they will return to work, but not otherwise." This, of course, made a meeting useless. Two months ago the operators decided that unless the men went to work within a time which they stipulated they would suspend the check-off. But before doing so there was a conference between National President Lewis and President Elliott of the Southwestern

Association, which failed utterly to reach any sort of an agreement, because of the fact that the operators had notified the miners that they would suspend the check-off unless they went back to work. The time expired and the check-off being suspended the strike is general in the Osage district. A meeting of the operators was held Thursday of last week to discuss the situation.

CONCILIATION BOARD RULING FORCES A CLOSE.

The Fernwood colliery of the Hillside Coal & Iron Co., located at the Boston settlement, near Pittston, shut down indefinitely because of a ruling of the Board of Conciliation, which establishes a rate for rock work which the company considers too high to allow it to operate the colliery at a profit. This is the first instance in the history of the Board of Conciliation where such action has been taken and is a rather unexpected result of the creation of that body. The colliery has been the scene of several disputes as to various matters and at the last meeting of the board the question of the size of cars was considered, the men claiming that a larger car had been placed in use without corresponding increase in compensation. The company in its answer at that time intimated that the mine would probably be closed because of this fact. Recently the board established a price of \$2.20 per yard for rock and this is given as the reason for the suspension. About 200 men and boys are affected by the suspension. The colliery is a part of the Butler mine, to which is shipped the coal mined at the Fernwood for preparation for market.

The cage in the Klondike mine, No. 4, at Clinton, Ind., dropped sixty feet while taking twelve men down to work. One man's back was broken, five men had their legs broken and all the other men were seriously injured.

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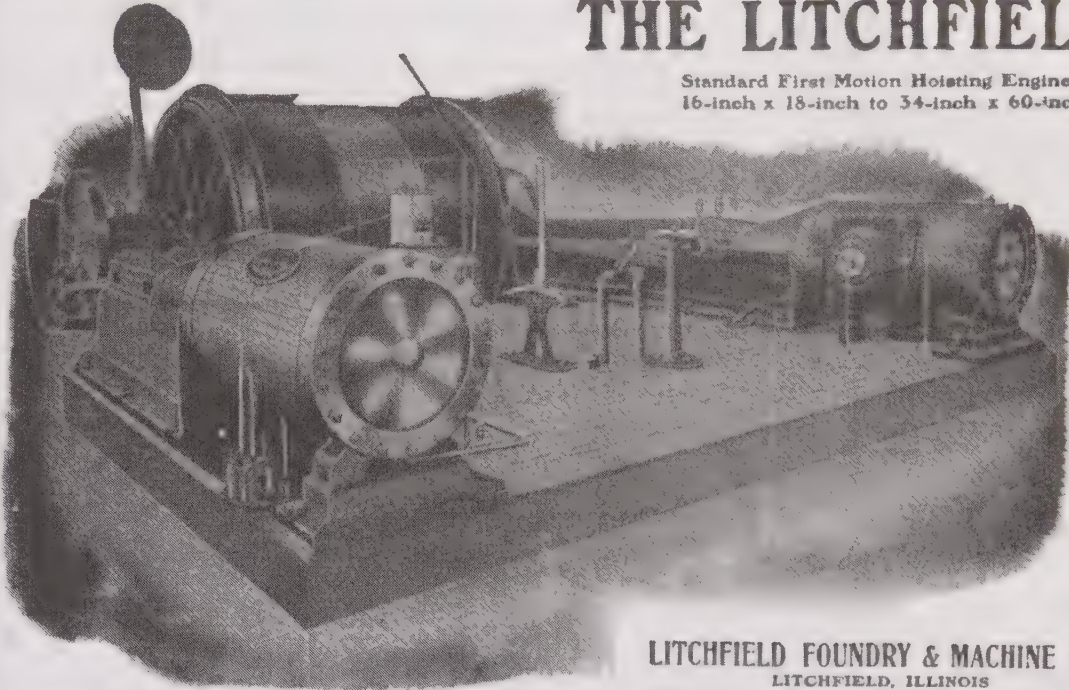
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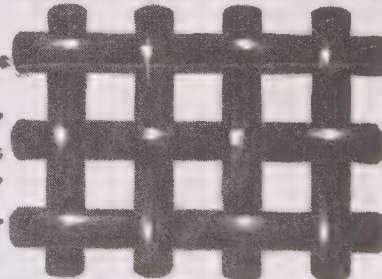
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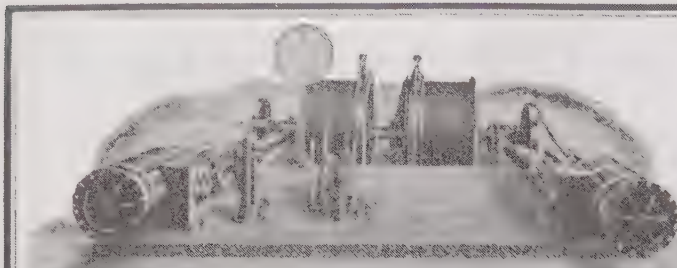
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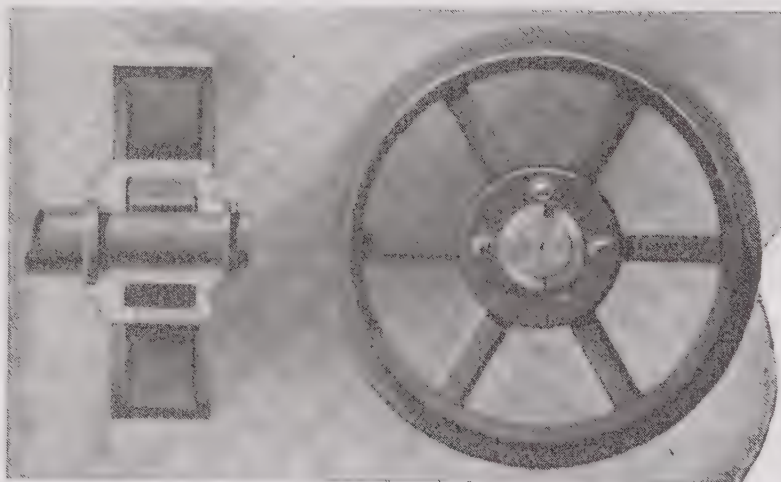
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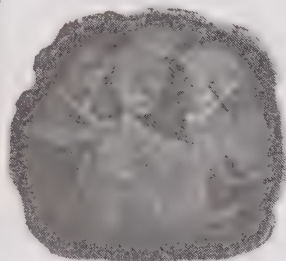
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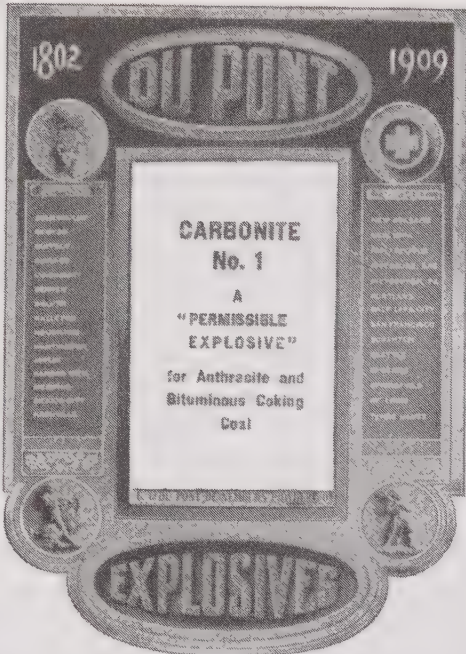
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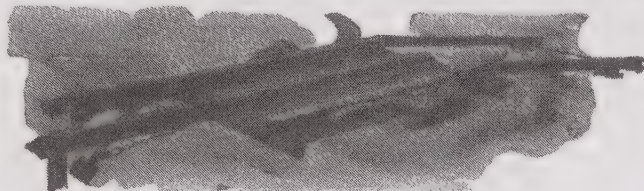
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Vol. XIII. No. 11.

CHICAGO, ILL., JULY 13, 1909.

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STATE AND ANTI-TRUST LAWS BLAMED

Helpless Condition of the Coal Industry of Illinois Today Brought Upon It by Rigid Enforcement of Legislation Without Regard to Reasonableness—Mere Repressive Regulation of the Railroads Cannot Make the Coal Industry Prosper.

(Statement of G. W. TRAER Before the Interstate Commerce Commission in Chicago, July 8, 1909.)

Illinois is the second largest coal producing state in the United States. During the year ending June 30th, 1908, the production of Illinois coal was 50,000,000 tons in round figures. The coal bearing area of Illinois is oval shaped with its greatest length lying from northwest to southeast. It extends from near Rock Island southeasterly across the Wabash River into Indiana and across the Ohio River into Kentucky. In width it extends from St. Louis northeasterly into Indiana in the vicinity of Terre Haute. It is like a basin with coal coming to the surface around the edges and in a general way dipping toward the center from all sides. The large coal producing areas are very largely along the outer side of the basin.

* * *

Coal is produced in 43 counties of Illinois, but 43,500,000 tons or 87 per cent is produced from 19 counties, 16 of which lie along or near the outer side of the basin.

Five of these sixteen counties, Grundy, LaSalle, Bureau, Fulton and Peoria, producing about 7,000,000 tons during the year ending June 30th, 1908, are in what is generally called the Northern Illinois Group or Field, although Fulton and Peoria Counties are frequently called the Peoria Field as distinguished from the more northerly counties. This coal other than railroad fuel practically all goes north, northwest, and west—a very small proportion of it to Chicago. Coal in the three northern counties is second highest in the state in quality, southern Illinois being first. It costs approximately 50 cents per ton mine run more to produce it than southern Illinois coal. It costs approximately 40 cents per ton more to produce it than central Illinois coal and is somewhat better in quality than the latter. It costs approximately 25 cents per ton more to produce it than the Peoria coal and there is probably that much difference in the quality. The three northern counties are served by the E. J. & E., the C. M. & St. P., the C. & N. W., the C. R. I. & P., and the C. B. & Q., and the I. C. Railroads. The Peoria Field is served by the C. B. & Q., the Iowa Central and the T. P. & W. Railroads.

* * *

Vermilion County, generally known as the Danville District, producing about 3,000,000 tons per year, lies on the northeast side of the basin. Substantially all of this coal not used for railroad fuel, goes to Chicago and vicinity. Danville coal is about the same quality as Central Illinois. It pays the same mining price, but the average cost of production possibly is a little more than central Illinois, with equal running time, because of

local conditions. This district is served by the C. & E. I., the Chicago Southern, the Big Four and the Wabash Railroads.

Five of these sixteen counties, Sangamon, Macoupin, Christian, Marion and Montgomery, producing 13,000,000 tons during the year mentioned are included almost wholly in what is known as the Central Illinois group. The coal from this group, other than what is used in nearby markets and for railroad fuel and a small proportion to St. Louis goes to Chicago and north and northeast. The coal in these counties all pays the same mining price, with equal running time costs about the same and is all very nearly the same in quality. It is known by various trade names such as Springfield, Virden, Mount Olive, Pana, etc. These counties are served by the C. & A., Wabash, Illinois Central, C. B. & Q., C. & E. I., Big Four, Clover Leaf, C. P. & St. L., B. & O. S. W., C. H. & D., and the Litchfield & Madison Railroads.

* * *

Two counties, Madison and Perry, which produced about 4,500,000 tons are partly in the Central Illinois Group and partly in what is known as the St. Louis Group and the Southern Illinois Groups. A good deal of this coal goes to Chicago and north and northwest and the remainder of it, outside of railroad fuel, into nearby territory or St. Louis and west and northwest. Madison and Perry Counties are served by the Wabash, Illinois Central, Vandalia and St. Louis, Troy & Eastern Railroads.

Three of these counties, Clinton, St. Clair and Randolph, producing about 6,000,000 tons annually, together with part of Madison and Perry counties, are in what is known as the St. Louis Group, the coal from which, other than railroad fuel, largely goes to St. Louis and west and northwest. These three counties are served by the various railroads running east and southeast from East St. Louis. The cost and quality of the coal in the last two groups is substantially the same as central Illinois.

Three of these counties, Williamson, Saline and Franklin and a part of Perry, producing nearly 10,000,000 tons annually, are in what is known as the Southern Illinois Group. This coal has much the widest range of markets of any coal produced in the state. It is largely used for railroad fuel, goes very largely to Chicago, into the northwest and west and also into the southwest and south as far as Louisiana and Texas. Coal in this group is of the highest quality and lowest cost in the state. It is served by the Illinois Central, C. & E. I., C. B. & Q., Big Four, and Iron Mountain Railroads.

Up to about ten years ago the coal deposits underlying the lands in the Illinois coal basin very largely still belonged to the owners of the land, even on and near the

margin of the basin. At the present time the larger part of the most available coal near the margin of the basin and near railroad facilities, is owned by mining companies, railroad companies and industrial companies. A good many of the mining companies own large areas of coal in bodies ranging from a few thousand acres to 35,000 to 40,000 acres. A number of the large railroads have acquired from 5,000 to probably 40,000 acres each of coal as a reserve to protect their future fuel requirements and coal traffic. Some of the large railroads and a number of the smaller ones also are interested in the production of commercial coal in competition with independent mine owners. Most of the railroad interests which own coal property also produce locomotive fuel for their own use either directly or through some mining company in which they are interested or with which there is an associated financial interest.

* * *

The consumption of Illinois coal and the consequent production have increased very rapidly. Twenty-three years ago during the year ending June 30th, 1886, the production was about 11,000,000 tons. By 1888 the production had risen to about 20,000,000 tons. It declined to about 17,000,000 tons during the dull years following the panic of 1893 and when prosperity began to return in 1898 the annual production was about 19,000,000 tons. The industry was fairly prosperous from 1899 until 1903-4 when it reached the apex of its prosperity. The annual production reached 35,000,000 tons in the latter year. Following the year ending June 30, 1904, the production increased with still greater rapidity until it reached about 50,000,000 tons during the year ending June 30th, 1908. But after 1904 the industry steadily grew less and less prosperous, in spite of the great increase in the volume of business.

The year during which the production reached the highest figure was the most unprosperous year in the history of the industry. This resulted from a number of causes. There was a much larger increase in producing capacity than there was in demand and actual output. During the year ending in 1899 there was 322 rail shipping mines in the state. These mines in the aggregate worked an average of 206 days during the year and had an aggregate daily capacity of 110,000 tons. During the year ending in 1908 there were 410 rail shipping mines. The average number of days run during the year was 191 and the aggregate capacity of these 410 mines was 250,000 tons per day. During the nine years between these two dates the number of shipping mines increased 25 per cent, while their aggregate daily capacity increased 127 per cent. The result was that the average number of days operation for all mines fell from 206 in 1899 to 191 days in 1908. This means that in the year when the tonnage of the state was the largest ever produced the mines of the state worked a little less than two thirds time.

* * *

During the year ending in 1904 when the industry was moderately prosperous the average number of days run was 222 or about three quarters full time. The natural fluctuation in the demand for Illinois coal between summer and winter is such that the industry never can expect to work full time. A sufficient capacity must be maintained to meet the full requirements of the winter season and this necessarily means that the mines cannot be run to their full capacity during the summer season. Illinois coal cannot be mined in the summer and held for use in the winter, because it contains such a percentage of moisture that the lump coal will crumble and slack when it is exposed to the air for a month or more. It has to be produced substantially as ordered from time to time and this makes the production or demand (and demand and production mean the same thing

in Illinois) much less during the months from April to September inclusive than during the other months of the year. This condition is so uniform that the relative percentages of production during the busy season and the duller season have not varied materially in ten years except when temporarily affected by anticipation of a strike or by abnormal business conditions. The industry can be moderately prosperous on three quarters annual running time but should have 80 per cent or more average annual running time to enjoy anywhere near the prosperity that has been enjoyed by the other basic industries. When annual running time falls below three quarters full time the annual average cost per ton increases excessively on account of the dead expense of idle time. The fear of this dead expense causes excessive competition among mine owners to secure a greater than the average share of running time, which in turn has a disastrous effect upon the average price per ton at which the coal is sold.

The scale of mining wages in Illinois has been controlled by the most powerful labor organization in the United States since 1898. The rates of wages reached the top in the year ending in 1904 and have remained stationary since then.

During the year ending in 1898 the industry was demoralized and unprosperous. The average selling price per ton at the mines of all sizes of Illinois coal was 78 3-10 cents; and the average price per ton paid the miners for blasting down the coal and putting it on pit cars at the working faces in the mines was 44 1-10 cents, leaving the mine owner 34 2-10 cents out of which to pay all day wage labor required to haul the coal underground, to hoist and load it, to lay underground tracks, to timber and pump the mines, to pay for fuel and other supplies, wages of superintendents, expense of administration and selling, taxes, insurance and sinking fund on the property. The latter item of expense is as certain as taxes, because when the coal in a mine is exhausted, as it certainly is in comparatively few years, the property is of little or no value.

* * *

During 1903-4 the average selling price at the mines for all sizes of coal rose to \$1.10, the average price per ton paid miners to 59½ cents, leaving 50½ cents for all other expenses of operation, maintenance, etc., and profit, if any, to the mine owner. There was only a moderate profit during this year.

The year ending in 1908 was very unprosperous. The average selling price at the mines fell to \$1.02 per ton and the average price paid to miners remained 59 3-10 cents, leaving only 42 7-10 cents to the mine owner to pay all the expenses mentioned. This amount, 42 7-10 cents, must cover in addition to monthly salaries, day wages, timber, iron, mule feed and other supplies. The cost of day wages, materials and supplies have increased 40 per cent or more since 1898, so that the mine owner is worse off with a margin of only 42 7-10 cents for the expenses mentioned in 1908 than he was with a margin of 34 2-10 cents in 1898.

The figures expressing the results for 1909 will not be available for a number of months, but it is certain that they will be the worst ever experienced.

It is not difficult to explain the reasons for the occurrence of a serious decline in average selling prices during recent years while the demand and output were increasing faster than ever before.

There are about 410 rail shipping mines in Illinois owned by about 270 operators corporate and individual, all of whom are entirely independent of each other and constantly engaged in the most ungoverned and ungovernable competition. The results are only what should be expected by every thinking person. Mine owners are losing money

and many of them are in desperate financial condition. The miners and mine laborers although nominally receiving the highest rates of wages ever paid in Illinois or any other state for similar work, actually have only about two thirds working time per year and their annual wages are lessened accordingly. The additional time each of these mines might be working under a reasonable and sensible regulation of the industry is absolutely lost to the miners and laborers and the communities in which they live.

The general population of the communities in which coal mines are located, as a rule are suffering greatly in their business affairs.

The intense economy forced upon mine owners by these conditions is seriously affecting the proper conservation of the coal deposits.

* * *

These conditions are suffered by every one dependent upon the industry, while the consumers of Illinois coal as a general rule are buying the coal at the cheapest prices in the world. The average price at the mines for bituminous coal used in Chicago and St. Louis is cheaper than in any other of the great cities in this country. The prices paid for Illinois coal by the transportation companies and industries is less than half the price paid for coal for similar uses in Great Britain and on the continent of Europe.

The fundamental reasons for this situation are in the Anti-Trust Laws, both State and Federal. The Illinois Anti-Trust Law has been enforced with the utmost rigidity against every attempt on the part of coal mine owners to regulate the production or selling price of coal, without regard to reasonableness. I believe the Sherman Anti-Trust Law has been applied in the same way. It is probably no more than is to be expected of human nature that buyers of coal, particularly very large buyers, should take advantage of the helpless condition of the industry. As a matter of fact they could not very well help taking advantage of it to some extent, because unduly low prices often have been literally forced upon them by demoralized mine owners.

* * *

Some objectionable elements have existed and still exist in the relations of railroads to the coal industry, which it should be possible to remedy. But there are certain peculiar elements in these relations which do not exist in the relations of railroads to other industries and which must be taken into account in bringing about practically effective regulation.

When everything reasonable in the way of railroad regulation has been brought about a railroad will still have the right to buy its fuel coal where and from whom it pleases. Railroad fuel coal is by far the largest single item of demand for Illinois coal. There are legitimate reasons why railroad fuel coal may be desirable business to a mining company at the minimum profit.

The selling value of Illinois bituminous coal at destination on the average is one-half, if not more than half freight charges. The interest of the carrier in this traffic at destination is substantially equal to that of the mine owner. For that reason railroads have a special and peculiar interest in coal traffic differing from other commodities transported by them. A railroad company with a well established coal traffic is reasonably certain to hold that traffic permanently unless it permits itself to be cut off from an adequate coal supply.

There should be no question as to the right of railroad interests to hold property and enter into relations or arrangements necessary to protect the future of their fuel supply and coal traffic, if it is done openly and above-board, subject to regulation or prohibition in such details as may be shown to be against the public interest.

The Illinois coal industry cannot be put on a sound

basis merely by repressive regulation of the railroads. A very large number of independent mining companies cannot continue to exist unless the industry is permitted to be sanely and reasonably regulated (with proper recognition of the vital interest of the railroads in the subject), under suitable publicity and to such extent as can be justified with due regard for the public interest.

THE DEMONSTRATED EFFICIENCY OF THE ILLINOIS COALS

The engineering experiment station of the University of Illinois, as is well known, is doing a great work for the mineral resources of the State, and in no direction more than in demonstrating the efficiency of Illinois coals for steam and domestic purposes. They have recently been making a series of tests with a number of different Illinois coals in house heating boilers with a view to determining the proximate analysis as to b. t. u., or heating content. A complete report concerning these tests will be published at a future date, and as indicating the interest and value of this report the following table will be useful. These tests have been made under varying conditions. For instance, the experiment station has operated the heaters at from 15 to 135 per cent of their rated capacities and under different service conditions. The efficiencies thus obtained have, of course, also varied greatly. Most of them, however, have been in the neighborhood of 50 per cent: that is, about 50 per cent of the b. t. u. content as shown by the table was transmitted to the water or air as the case might be.

It will be observed that all the Illinois coals tested, representing every coal section of the State, show a high b. t. u., the highest being, singularly enough, in Grundy county, in the northern part of the state, and in Saline county in the southern part. It will be seen, however, that every sample tested which is referred to in the table shows a very high degree of efficiency under the new method of computing the power of coal and that Illinois coals can therefore stand with any other in the tests advocated by the government in valuing fuel by the b. t. u. methods. It is only a partial report; the full results of the series of tests will be awaited with interest, not only by the coal operators but by the large users of coal. It will be noted that this table refers to the efficiencies of the coal in a domestic way, these being house heating boiler tests.

A requirement for good domestic coal is a low percentage of ash. It will be seen that the Grundy county coal is not only near the highest in b. t. u., but has the lowest percentage of ash of any of the group here given. It is also very high in fixed carbon.

No.	Name of County.	Coal as Fired.				Sulphur separately determined.	
		Fixed Carbon.	Volatile.	Moisture.	Ash.	% mined.	B.t.u. Per lb.
		%	%	%	%	%	
1	La Salle	40.27	42.43	9.53	7.77	3.67	11831
2	Grundy (Wilmington)	44.04	42.44	11.17	4.35	2.32	12145
3	Peoria	40.41	37.76	11.14	10.69	2.93	11150
4	Tazewell	41.11	37.48	9.80	11.61	2.91	11196
5	Vermillion	40.41	39.50	11.19	8.90	2.14	11545
6	Sangamon						
7	Macon	40.11	37.77	10.24	11.88	3.13	11010
8	Christian (screenings)	39.04	36.12	11.58	13.26	6.15	10341
9	St. Clair	48.18	33.42	7.44	10.55	1.42	11794
10	Williamson	50.96	34.95	6.46	7.63	1.97	12686
11	Saline						

The contract was awarded by the Colorado Fuel and Iron Company for the construction of twenty new houses at Coal Creek, Colo., and work will be started at once. They will be 24x26 feet and contain four rooms each and will be built of concrete.



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No. II.

The Greatest Thing in the World.

HENRI FREDERIC AMIEL

WHEN everything around a man staggers and wavers, when all seems dark and dim in the far distance of the unknown future, when the world seems but a picture or a fairy tale, and the universe a chimera, when the whole structure of ideas vanishes in smoke, and all certainties become enigmatical, what is the only permanent thing which may still be his? The faithful heart of a woman! There he may rest his head, there he will renew his strength for the battle of life, increase his faith in Providence, and, if need be, find strength to die in peace with a benediction on his lips. x x x x x x x x x

The effort of the coal operators of the Pittsburg district to use the permissible explosives and to do away with the black powder, and thus to stop the slaughter of miners that black powder has caused, is resisted by the miners themselves, who allege that the permissible explosive does not bring down as much coal. If the miner would work as many hours as the agreement fixes for a day's work he could drill so many more holes that the new explosive would

bring down even more coal than the black powder. The miner has become too much attached to three holes and a cartload of powder for his own safety or his own good. The blown-out shot, fruitful in death and destruction, is impossible with the new permissible explosives.

TAKE A DAY OFF SATURDAY.

The weather is now just at the right stage for an enjoyable day in the out-of-doors, and the best opportunity afforded for such a day is to go to the coal dealers' picnic Saturday at Riverview Park, Aurora. This annual outing of the coal men is one that gives always a chance for a pleasant day, and offers a variety of amusements that could hardly be surpassed. The appreciation of the event has been shown already by the sale of hundreds of tickets, and during the few remaining days the demand is bound to increase. The program of contests is a long one, and so varied that each can find some in which to be especially interested, so that there will be something for all who go.

The dollar paid for the round-trip ticket is all the cost. There will be three trains, leaving the Aurora, Elgin & Chicago railroad station on Fifth avenue at 8:45, 9:15 and 9:45, and stopping at Marshfield and 52d avenues. There have been special arrangements made for the pleasure of the little ones, in the children's playground, and tickets for all from six to twelve years of age will be but fifty cents. Every coal man who will stop work and take a day in the park will feel better for the week to come.

WHAT IS THE MATTER WITH COAL.

The investigation now under way at the instance and under the management of the Interstate Commerce Commission is with the expressed purpose of finding out the causes of the present depressed condition of the coal trade—particularly in the West. It is to be hoped that these gentlemen will ascertain the full facts in the case and that something may be recommended in the direction of real reform. But, with all deference to the wisdom of those making the investigation, it is by no means certain that such will be the result. An investigation, the groundwork for which was worked up without the widest knowledge and co-operation of the industry most concerned, which did not freely consult the coal operators or the coal carriers, but came at both these elements with prepared questions formulated by special attorneys with the purpose of getting primarily at such facts as bore on the line to be followed, can hardly draw out all the truth. The coal industry has been subject to so many investigations before this, that naturally a good many will ask, "What's the use?" The preliminary secrecy would have been better suited to some investigation of criminal charges.

The seeming object of looking into the coal industry has too often, unfortunately, been to see who can be convicted of something, or placed in position for indictment. The fact that these indictments usually prove to be mistakes and usually, if justice be done, end in the matter being dismissed and the victim of the investigation having to pay for his innocence in lawyers' fees, and suffer a great deal of

inconvenience, has made coal men somewhat sceptical as to the chance of arriving at altogether useful results. The Interstate Commerce Commission investigations have not proceeded heretofore in that way, as they show good faith by endeavoring to get at the bottom facts, and so go deeper into the matter than any previously prepared list of questions could indicate. But it is evident from the course of the investigation so far that somebody has been in favor of fastening the bulk of the blame on the railroads. The able paper prepared by G. W. Traer on the condition of the coal industry of this state forms a good background for all that may develop during the present hearing, and embodies some conclusions which every man in the coal business will instinctively recognize as true.

So far as objectionable elements exist in the relations of railroads to the coal industry, the remedy should be easy, but to bring about effective regulation it will be necessary to know and to take into account certain peculiar elements which do not exist in the relations of railroads to other industries. No one can dispute the right of the railroad company to buy its fuel coal when and where and from whom it pleases. Nor can FUEL see how the price at which the coal is sold can be regulated by any law that can be enacted. As Mr. Traer points out, there should be no question of the right of a railroad to own property and make the arrangements necessary to protect its future fuel supply and coal traffic, if only everything be done openly and above-board, and subject to regulation and prohibition only where shown positively to be against the public interest. But the entire responsibility for present conditions can not be charged against the railroads, nor can the present conditions be corrected by clubbing the railroads into a comatose condition like that from which they are just recovering.

Excessively keen competition arising from the undue expansion of the coal industry, and the production of coal vastly in excess of the needs of the country buying coal from Illinois have conspired with the laws to ruin business. There should be accorded the producer the right to get a fair price for his coal; but the unconsidered legislation of state and nation on this subject has taken that right away from the producer. With an agreement that coal should all be sold at a price not below its cost of production, this could be carried out. But now not even two men dare under the law to agree to hold their coal rather than sell it at a loss, for fear of indictment for "conspiracy." The consequence is that no coal operator knows what price his competitors are making, and in order not to lose his coal entirely he throws it on the market and lets it go at figures which are in actuality below what it cost to hoist the coal, not to mention the many other sources of expense involved in its production. This results in the continuance of the most wasteful of methods in mining—for when the operator does not know how low he may have to sell, he is going to get the coal out in the easiest—and that inevitably means the most wasteful—way he can.

Nor does this low price forced on the operator benefit the small consumer, for it is the large industry that profits

by the condition. The small consumer must in every case pay more because the bulk of the coal has gone to large buyers at ruination prices. For this the so-called anti-trust laws are clearly and wholly responsible. With the right to meet and declare a price below which coal should not be sold, there would not be such an over-production, nor would there be such prices literally forced on the larger buyers by those operators most pressed for ready money. The low selling price of coal helps nobody. It demoralizes the business and makes the industry in many sections a hand-to-mouth business, with frequent recourse to the bankruptcy courts in the end.

The members of the Interstate Commerce Commission conducting the Chicago hearing seem anxious to get all the facts. They should have them, and then they should recommend such remedial legislation, or repeal of legislation, as will, in the opinions of the coal operators themselves, serve to correct abuses. If the coal operators do not know what is the remedy, who does?

PERSONAL

Grovenor Hutchins, vice president of the Jeffrey Manufacturing Company, of Columbus, O., and for thirty-one years identified with that well-known establishment, has resigned his position. There was no statement of Mr. Hutchins' reasons except that he thought it was long enough to have been with one concern. What he will do he has not decided, but will first take a good vacation. Then he will surely be prominent again in some line of business. The resignation was unexpected and the Columbus newspapers say was "a shock to the business community."

* * *

The following appointments have been made by the Pennsylvania Railroad Company, all becoming effective the first of July:

John C. Earls has been appointed Freight Solicitor, with office 102-103 Wilder Building, Rochester, N. Y.

H. P. Dunbar has been appointed Freight Solicitor, with office Brisbane Building, Buffalo, N. Y., vice John C. Earls, transferred.

W. S. Franklin, Jr., has been appointed Freight Solicitor, with office Baltimore and Calvert Streets, Baltimore, Md.

Edward S. Neilson has been appointed Freight Solicitor, with office 902 Chapel Street, New Haven, Conn.

J. Harry Cross has been appointed Freight Solicitor, with office 736-738 Broad Street, Newark, N. J.

J. H. Neeld has been appointed Freight Solicitor, with office 1019 State Street, Erie, Pa.

* * *

C. H. Chisam, formerly president of the Iowa and Nebraska Coal Dealers' Association, declined to allow his name to be presented for president of the Northwestern Coal Dealers' Association, into which the former association was merged.

* * *

Everett E. Johnson, formerly prominent in Saginaw, Mich., coal affairs, as head of the firm of Everett T. Johnson & Company, is dead, having passed away at Pontiac, where he had been ill from anemia the last four years.

* * *

Guerino William Baldi, coal merchant of Philadelphia, is dead, aged 34.

MINE INSPECTORS SEE EXPLOSION TESTS

Technologic Branch of the United States Geological Survey Show Members of the Mine Inspectors Institute of the United States Usefulness and Practicality of the Work They Are Doing—An Object Lesson for Illinois.

(Text and Photographs by JAMES TAYLOR, State Mine Inspector, Peoria, Ill.)

On Saturday, June 12th, the members of the Mine Inspectors Institute of the United States of America were invited by Dr. J. A. Homer, expert in charge, Technologic Branch of the United States Geological Survey, to pay a visit to the Pittsburg, Pa., station. This branch of the United States Geological Survey is interested in the chemical and practical analyses of fuel, cement, mine gases, in explosives and mine explosions, their cause and prevention. For this work they have a complete testing laboratory, where they are making careful examinations of the various explosives used in coal mining with a view of determining how much of a factor explosives are in causing explosions in dusty mines where fire damp has not been detected.

The program arranged for the instruction of the visiting inspectors is outlined in the illustrations and accompanying matter herewith:



Fig. 1. Gas and Dust Gallery No. 1.

Figure 1 shows what is known as Gas and Dust Gallery No. 1. This gallery is a large boiler iron gallery 6 feet 4 inches in diameter and 100 feet in length. Inside, at each circular joint, is an angle iron around the inside circumference, each representing a section of the gallery. At the end nearest you as you look at Figure 1 is a concrete building in which a cannon is imbedded in concrete. This represents the working face of an entry, while the charged cannon represents a dead hole that will cause a windy or blown out shot.

At one of the sections a paper brattice is placed around the angle iron, making it tight. The Methane or Marsh gas is then introduced through a pipe to any or all sections of the gallery. There are short-iron shelves 4 inches wide on each side of the gallery, upon which coal dust can be placed. At the top of the gallery there are safety doors or valves placed at stated distances the whole length, and these are left so as to open whenever there is an explosion inside the gallery.

Test A in gas and dust gallery No. 1 was to determine the effect of a charge of Aetna coal powder "A" (D-759) tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 cent nitro-glycerine dynamite when fired into a mixture of gas and air containing 8 per cent of Methane and Ethane. (Methane is CH_4 or

Marsh gas; Ethane is C_2H_6 . These compounds bear a simple relation to one another, as far as composition is concerned.)



Fig. 2. Gas and Dust Gallery No. 1, Showing Result of Test A.

The snap shot reproduced in Figure 2 was secured by me immediately after the ignition of the charge; you will observe a steam mist issuing from the open valves which are located on the top of the gallery. There was no ignition of the gas, hence no explosion.



Fig. 3. Gas and Dust Gallery No. 2, Showing Result of Test B.

Figure 3 shows gas and dust gallery No. 2, in which was made Test B. The purpose of this test was to determine the effect of an electric spark on a gas and air mixture containing 8 per cent of Methane and Ethane. The result of the test is readily understood by Figure 3, which was taken at the moment of explosion. The flame of the explosion extended a distance of about 20 feet beyond the mouth of the gallery. You will observe in the flame a portion of the paper brattice which had been used for a partition while filling the gallery with gas.

In Figure 4 the unconsumed brattice paper will be noticed on the ground, and on the angle iron around the inside of the gallery. The importance of this test is of such a nature as to call the attention of the mining interests of this



Fig. 4. Gas and Dust Gallery No. 2.

country to the use of electricity in gaseous mines.

In Figure 5 you observe the mine inspectors of the different states about to enter the gallery for the purpose of testing the mixture as determined by the height of flames of the different kinds of safety lamps. Each inspector was furnished with a safety lamp, the number of which was taken down in a note book opposite his name. He was requested to make an examination of the mixture of air and gas and on his return from the gallery to report his finding to the mining expert in charge of this test as to the action of gas in the lamp he carried. There were no two lamps of the same make and different results were obtained. You



Fig. 5. Gas and Dust Gallery No. 2.

will notice J. W. Paul entering the gallery with a safety lamp. He has charge of the safety lamp test. Test J was in Gallery No. 2, and was the testing of the percentage of a mixture of gas and air containing 3 per cent of Methane and Ethane with different safety lamps by the height of the flame. In this test a Wolf lamp in my possession gave a flame about $\frac{1}{4}$ inch high. Gallery No. 2 is 10 feet in diameter and 30 feet long. It is one of the important pathfinders in the investigation of fire damp, and electricity. The tests at this station fully demonstrate that Dr. Holmes and his associates are doing things in practice and not in theory only.

Test C, in gas and dust gallery No. 1, was to determine the effect of a charge of carbonite No. 1 (D-661), tamped with one pound of dry fire clay—equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into a mixture of gas and air containing 8 per cent of Methane and Ethane. There was no ignition of the gas in this test.

Test D, in the lamp gallery, on the first floor building No. 17, was the testing of single gauze lamps, not bonneted, in a horizontal current of gas and air containing 8 per cent

of Methane and Ethane at a velocity of 600 feet per minute.

The inspectors from the various states were so much interested in this test that they requested Dr. Holmes to arrange for other tests, which he did. The inspectors of the several states were placed in different groups, and made a very exhaustive investigation of testing the safety lamps with different velocities and mixtures of gas.

This gallery is one of the best pathfinders for safety lamps in the presence of fire damp, in small or great velocities of air current. Yet we have been unable to find a substitute for the gauze of a safety lamp. With all the different arrangements of safety lamps, not one of them is of any service as a safe lamp in the presence of fire damp without the wire gauze; and up to the present time we have not learned to dispense with it on our safety lamps.



Fig. 6. Gas and Dust Gallery No. 1, Showing Results of Test G.

Test G, in Gas and Dust Gallery No. 1, was to determine the effect of a charge of FF black blasting powder (B-767) tamped with two pounds of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite, when fired into a mixture of gas and air containing 8 per cent of Methane and Ethane.

Figure 6 shows the effect of this explosion. The gas was ignited by the powder; the light smoke is seen issuing from the safety valves on top of the gallery. You will observe Mr. Hall, who has charge of the explosive test, going towards gallery No. 1 to give instruction in regard to the next test. The mine explosives investigation work is in charge of Clarence Hall, an explosive expert.



Fig. 7. Mr. Rhys, of Iowa, T. Moses of Illinois, and Mr. Johnson.

Test H was in the Rescue Room, second floor of building No. 17. This was a demonstration of rescue apparatus in a gas-tight room, and was very instructive to those interested in rescue work after an explosion. It demonstrated

that with the use of the helmet a party of men could descend into a mine containing noxious gas, and save those who had been overcome. Figure 7 shows the three persons returning from the testing chamber in which they wore the helmet. The one to the left is Mr. Rhys of Iowa, the center figure is Thomas Moses of Illinois and the third is the expert who had charge of the gas-tight room.

Test I was in Gas and Dust Gallery No. 1, to determine the effect of a charge of Coalite No. 1 (D-656) tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into 120 pounds of bituminous coal dust (M-715) 100 mesh fine, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3; 100 pounds on side shelves in Sections 1 to 15 inclusive. There was no ignition of the coal dust by this test. This is one of the permissible explosives.

Test K in Gas and Dust Gallery No. 1 was to determine the effect of a charge of Collier Dynamite No. 1 (D-681) tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite. When fired into 120 pounds of bituminous coal dust (M-715), 100 mesh fine, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3, and 100 pounds on side shelves in Sections 1 to 15 inclusive. No ignition of coal dust by this test.

Test L in Gas and Dust Gallery No. 2, was a continuation of Test K.

Test M, in Gas and Dust Gallery No. 1, was to determine the effect of a charge of Masurite M. L. F. (M-775), tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into 120 pounds of bituminous coal dust (M-715), 100 mesh, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3, and 100 pounds on side shelves in Sections 1 to 15 inclusive. No ignition of the coal dust by this test. Masurite M. L. F. is on the list of permissible explosives.

Test N, in Gas and Dust Gallery No. 2, was a continuation of Test K.

Test O, in Gas and Dust Gallery No. 1, was to deter-



Fig. 8. Gas and Dust Gallery No. 1, Showing Results of Test O; Dust Explosion With FF Black Blasting Powder.

mine the effect of a charge of FF black blasting powder (B-767) tamped with two pounds of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into 120 pounds of bituminous coal dust (M-715), 100 mesh fine, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3, and 100 pounds on side shelves in Sections 1 to 15 inclusive. There was a terrific explosion; all the safety valves were blown open, and a faint idea of the force of the ex-

plosion of the coal dust may be learned from Figure 8, which is a snap shot taken immediately after the explosion. Figure 9 shows the smoke rushing out of the open end of the gallery, and from the safety valves on top.

After the smoke had cleared away and the gallery cooled off another charge of FF black blasting powder was fired, without putting any more dust in the gallery, and we witnessed another explosion of the coal dust remaining from Test O.

If you will make a comparison of Test I, K, M and O, you will find that the same amount of coal dust was distributed in the same quantity and at the same places in Sections 1, 2 and 3. The samples of coal dust were the same



Fig. 9. Flame Testing Apparatus; Also Ballistic Pendulum, to the Right.

(M-175) Pittsburg seam. Yet we find that it required black blasting powder to explode the coal dust. In Test O there was only $\frac{3}{8}$ of a pound of FF black blasting powder. This is the powder we are using in the mines of Illinois, and which is causing so many explosions throughout the United States. In making an examination of the gallery after both explosions I found that fine dust or soot was on the lee side, of where the shot was fired.

In the gallery there are angle irons around the inside, at every circular joint, and we found the dust and soot on the outward side of these angle irons, and none on the side facing the place where the shot was fired. It would be



Fig. 10. Ballistic Pendulum.

money well spent if all coal companies in this state would send their superintendents and mine managers to this testing station that they may witness the effect of black blasting powder fired in a mixture of fine coal dust. It would be a step in the direction of bringing about conditions in the mines of this state that would remove the cause of similar explosions and thereby saving life and property.

Figure 10 shows the Flame Test Apparatus. In the building to which the flame test apparatus is attached is a

dark room in which a photographic machine is placed, that records the length and duration of the flame. While I was in this room two tests were made, one with black powder, and one with a permissible explosive. This test demonstrated that with equal quantities of each explosive the black powder gave three times the length of flame, and has a duration three thousand times that of one of the permissible explosives.

The testing apparatus consists of a vertical iron stack

in which a cannon is imbedded in concrete at the base of the stack. When the test is being made the top of the iron stack is covered tight with canvas and hoops, which at the time of explosion is destroyed. This covering is renewed at every test.

To the right in Figure 10 will be seen the Ballistic Pendulum, in which the various explosives are tested as to their relative force.

Figure 11 is another view of the Ballistic Pendulum.

THE FOURTH ANNUAL POWWOW A SUCCESS



Eugene Ambler, Imperial Modoc.

Gundlach and the responses down to the end of the program. In concluding his response to the welcome on behalf of the coal trade in general, A. J. Moorshead, president of the Illinois Coal Operators' Association, said:

"You young men of the coal trade have formed a social organization with a definite purpose in view. You are going to succeed to exact proportion to the strength of your organization. I am frank to say to you that the coal trade needs you. It needs anything that is going to bring orderliness out of the chaos into which coal affairs have been permitted to drift. If you continue to grow as you have grown in the last four years, and continue working upon the organization which you have already formed, you are going to be a great power in the coal trade, a power that by organized effort is going to put an end to the petty jealousies and strifes that have existed in the trade. You are going, as a very result of your organized effort and strong wills, to put the entire trade upon a bigger and broader foundation than it has ever occupied before.

"Appreciating what are your capabilities, your powers and your possibilities, it is my privilege, as a member of the coal trade of St. Louis, to welcome you members of the Order Kokoal to this city. At the same time I say to my own city government, that it does well to extend to you the freedom of the city, to give you a cordial and hearty welcome to our midst, and to help entertain you while here. I believe that before long this Order Kokoal is going to be one of the big influences in the coal business, and I believe that the city of St. Louis may feel proud that it has had an opportunity to entertain you, and to take at least a small part in the program that you are mapping out for yourselves and for the trade."

The reading of the reports of Imperial Pictor A. M. Hull and of Imperial Modoc Ayers followed. The former is given elsewhere in this issue, and presents a review of the order's progress during the year.

The following amendments to the constitution of the order were adopted:

Article IX, Section 9. Make it read: Any district may upon application to the Imperial Eleven Sentries be granted permission to form a local organization and elect their own officers to officiate at koruskations and conduct the affairs of the order in that territory subject to the approval and authority of the Imperial Eleven Sentries.

Section 10. These local organizations shall be known as Breakers and numbered in the order of the first koruskations in their territory and the authority and responsibility heretofore vested in the Skout shall upon the formation of a Breaker devolve upon the duly elected sentries.

Section 11. Each Skout or Breaker shall hold at least one koruskation or scintillation before January 1st of each year; otherwise their warrant of authority shall lapse auto-

The fourth annual powwow of Order Kokoal held at St. Louis on Friday and Saturday of last week was the largest and best attended of all that have yet been held, and the preparations made for their entertainment were the most elaborate and complete that have ever characterized any gathering. The St. Louis members had arranged every detail with a completeness that was simply perfect, and whether in business session or on pleasure bent there was absolutely nothing that could have been done to add to the pleasure and convenience of the visitors. The character of the attendance was also of the highest, and in every way the powwow was the greatest success yet attained.

The result of the election of officers was most fortunate, in giving to the order Eleven Sentries who will both in and out of season give their utmost endeavors to furthering the work. The program was fully carried out and some of the addresses were really notable in their character. The address of National President Lewis of the United Mine Workers was a masterpiece. It will be printed in full in the next issue of FUEL, as a document that should be preserved for future reference. But all the addresses were exceptional. There was nothing old and hackneyed in any of them, from the welcoming address of Acting Mayor

matically and the Imperial Eleven Sentries shall appoint another Skout to fill the vacancy.

The report of the resolutions committee was as follows:

The committee on resolutions feel sure that first and foremost it is the unanimous wish of this powwow that St. Louis chapter be most heartily and cordially congratulated and thanked for this most successful and delightful meeting. With this is extended our thanks to all who in any way assisted St. Louis chapter in more than sustaining the reputation of St. Louisians for genuine whole-souled hospitality.

We further wish to record as guests of this famous old hostelry, the Southern Hotel, our entire satisfaction with its service, and our appreciation of courtesies extended to St. Louis chapter and to this annual powwow.

We also wish to express our appreciation of the help of the press of St. Louis in the publicity they have given to this meeting, and to reiterate our cordial appreciation of the influence and aid extended by the various coal trade papers to this growing fraternity since its very inception.

Although the delegates assembled showed their appreciation by lustily cheering Brother Tom Lewis' speech, the committee on resolutions desire to congratulate the United Mine Workers of America on having so honest and able a leader, and further to have spread on the minutes of this meeting our application of a speech so vital to all of us, filled full of food for thought and reflection, and that we request the trade papers and secretaries of the various coal associations to give it as much publicity as possible.

We recommend that it is the sense of this meeting for the benefit of the business interests of the country, that the general assembly of the United States do now adjourn.

We learn with deep regret of the death of ten of our fellow members since we last gathered in national convention, and recommend that the Imperial Pictor be instructed by the Powwow to send a letter of condolence to the family of each of our deceased brothers.

We feel that the hearty thanks of the fraternity are due the retiring officers who, by zeal and fidelity to our prin-

ciples, have furthered the ends of Kokoalism, and we hope and trust that their successors chosen by this Powwow will continue the good work with all possible vim and vigor in a spirit of "Boost—Don't Knock."

In testimony of faithful service and continuing the precedent already established, we recommend that the retiring Imperial Modoc be presented with a jeweled emblem of the fraternity of the same design and value as previously presented, and it is further recommended that the retiring Imperial Pictor be presented with a jeweled emblem of like design.

As representatives in this Powwow of one of the greatest industries of the country, we urge upon all the factors eligible to membership in this fraternity a continuance of the helpful, elevating and dignifying work so aptly inculcated by our motto: "Come On and Lift."

Imperial Modoc—Eugene Ambler, Richards, Ambler & Co., Chicago.

Imperial Baron—A. H. Beddoe, Breese-Trenton Mining Co., St. Louis, Mo.

Imperial Baronet—J. S. Van Epps, W. S. A. Hudson Coal Co., Cleveland, O.

Imperial Baronet—W. C. Goodnow, W. C. Goodnow & Co., Minneapolis, Minn.

Imperial Pictor—Chas. E. Lester, Smith, Lineaweaver Co., Philadelphia, Pa.

Imperial Alazumer—W. T. Wilson, Fowler & Wilson, Ottumwa, Ia.

Imperial Gazook—Bushrod M. Watts, E. A. and B. M. Watts, Baltimore, Md.

Imperial Pit Boss—Dan Howard, Central Fairmont Coal Co., Clarksburg, W. Va.

Imperial Acolyte—Thos. F. Macksey, Dickson & Eddy, New York City.

Imperial Swatta—Randall K. Brown, Coal Hill Coal Co., Omaha, Neb.

Imperial Spotta—W. H. Sawtelle, F. W. Sawtelle & Co., Readville, Mass.

IMPERIAL PICTOR'S HOPEFUL VIEWS OF KO-KOAL

Imperial Pictor Arthur M. Hull, in reviewing the past year's work of Kokoal, finds that notwithstanding the unusually dull and discouraging conditions which have prevailed throughout the coal trade for the past year, Kokoal has continued to thrive and prosper, the fourth annual report showing the Order to be not only in a stronger and more influential position than ever before, but with the very brightest prospects for the future. He says in part: The extreme dullness that has existed in the business world, and more particularly in the coal trade, has kept everyone closely confined to their desks with the result that it has been really too much to expect of anyone to divert the requisite time and energy from their business to arrange meetings and arouse the necessary enthusiasm among the members in their territory to make a Koruskation a complete success. But in spite of this there have been held twenty-seven Koruskations at which 354 new members have been formally Koruskated. In addition to these a number of Scintillations, or general banquets of the trade have been held in various cities, which proved particularly popular, were largely attended, and have done much to show the possibilities of Kokoal in bettering trade conditions. The twenty-seven Koruskations have been held in 19 cities located in fourteen different states.

St. Louis shows the largest gain in membership, having added 68 new members to the ranks of Kokoal. Maryland comes next with 35, then follow Buffalo, 33; Philadelphia, 32; Chicago, 29; Milwaukee, 24; Minneapolis, 21; Oklahoma, 20; Toledo, 16; Kentucky, 14; Iowa, 13; West Virginia, 11; New York City, 9; Boston, 9; Connecticut, 8; Louisville, 7; and Indianapolis, 5. Skout A. H. Beddoe also leads in frequency of Koruskations, having held four, Philadelphia, 3; G. H. Merryweather, of Chicago, 2; W. L. Dennis, Oklahoma City, 2; A. A. White, Boston, 2; Jos. Mitcheltree, of Toledo, 2; while the others mentioned have held one each.

The largest class of the year was admitted to membership under Skout Charles L. Hall of Baltimore, numbering 35, while Buffalo and St. Louis are tied for second place with 33. As regards money turned into the general fund following the Koruskations, Skout A. H. Beddoe of St. Louis leads with \$212.39, Skout Charles L. Hall of Baltimore is second with \$110.93, and Skout Frank W. Fellenz of Milwaukee is third with \$78.72.

The receipts of the year were \$3,170.88, disbursements \$3,064.85, balance \$106.03. The fund has received something like \$2,100 less from Koruskations than during the previous year, for the reasons given. For the coming year

the prospects are of the brightest, and there are several sections all ready with large classes so that I have no hesitancy in predicting that by November 1st Kokoal will have added as many, if not more, new members than we have during the entire last year. As I look at it, the growth and development of Kokoal is one of evolution. At the start we had to transform an idea into something tangible. The next step was to gain favorable recognition throughout the trade, then to arouse sufficient enthusiasm to quickly add members throughout the country so as to make it a large enough organization to command respect and exert an influence for good.

We met each of these steps successfully, but the past year was really the most important stage of all, as it was necessary to develop the plan of organization still more by strengthening its foundations before further perfecting its superstructure. This has been done with advantage in many centers, and I feel absolutely confident, with the firm foundation upon which Kokoal now stands, our Order is bound to go steadily forward in rapid strides, exerting a constantly increasing and most potent influence for good.

I would suggest that for the purpose of improving the degree work that the local chapter idea be encouraged, except that instead of the chapter being confined to a city, they be given jurisdiction over a certain state or section of a state. Homer H. Allen of Erie, Pa., has suggested that we call these divisions Breaker No. 1, Breaker No. 2, etc., and I believe that would be an euphonious name. In charge of these chapters I would suggest that a local eleven sentries be elected with a provision in our by-laws that a minimum number of Koruskations and Scintillations be held within a specified time each year, otherwise their chapter will lapse automatically and the Imperial Sentries shall appoint a Skout as the executive officer in that territory. In sections where the Order is not strong enough for a local organization, Skouts shall be appointed the same as at present.

Another feature which is allowed by our constitution but which has not been developed the past year, is one which I believe will be of particular advantage in strengthening the foundation of Kokoal, and this is the provision covering the appointment of Sachems. A Sachem may be appointed in any town where there are four or more Kokoals, and his duties are to arrange from time to time for smokers, suppers or social entertainments in his district, which shall be

Such meetings will also prove excellent feeders for Kokoal, inasmuch as they cannot fail to arouse a favorable interest in the Order. In the large cities these Scintillations can be given on a more extensive scale, as has been done the past year at Chicago, St. Louis, New York, Philadelphia, Boston, Toledo, and other cities. At each of these a particularly noteworthy program has been arranged with addresses on important trade topics by some of the most prominent men in the trade.

After thanking the Imperial Modoc, the Eleven Sentries, the Skouts and enthusiastic members who have worked in the interests of the Order, Pictor Hull says: As you all well know there is no joy or pleasure in this world without its share of sorrow, so that I am particularly grieved to report the deaths of the following good and loyal Kokoals:

A. U. Oechler.....Kokoal	2033	St. Paul, Minn.
I. E. Will.....Kokoal	1750	Shelby, Ia.
J. A. Danenbaum.....Kokoal	1331	Minneapolis, Minn.
Frank E. Powers.....Kokoal	1221	Worcester, Mass.
Robert W. Frost.....Kokoal	1606	Waltham, Mass.
L. B. Gibbs.....Kokoal	818	Grand Forks, N.D.
G. D. Preston.....Kokoal	1132	Columbus, O.
J. W. Hunting.....Kokoal	2489	Glens Falls, N. Y.
John L. Phelps.....Kokoal	2474	St. Louis, Mo.
J. Henry Hemphill.....Kokoal	1582	Malden, Mass.
S. E. Gauthier.....Kokoal	469	Detroit, Mich.
D. M. Baker.....Kokoal	2565	Adrian, Mich.

W. J. Garvin.....Kokoal	1088	Winsted, Conn.
George Wellington ....Kokoal	2189	Pullman, Mich.
Henry A. Hay.....Kokoal	1581	Winthrop, Mass.
G. W. Baldi.....Kokoal	1347	Philadelphia, Pa.

As it is customary under our constitution these names will continue to appear in all future membership lists, appropriately marked to show that we still hold them in loving memory.

In conclusion I trust that I may be pardoned if I make a personal reference. It is now four years that you have honored me with the office of Imperial Pictor. In fact I had the privilege of sending out the original call for the first preliminary meeting, and I have had the pleasure of serving you as Pictor ever since. During that time Kokoal has constantly been uppermost in my mind. I fully appreciate that with a membership of 3,500 live, active men of affairs, we are bound to find several hundred different ideas as to how anything should be carried on, so that I find the greatest satisfaction and feel a particular pride in the fact that during my four years work for Kokoal there has never been the slightest unpleasant detail or the smallest difference of opinion as to the best policy to be pursued, and if there has ever been the least criticism as to the administration of its affairs it has never come to my ears. I shall always feel under lasting obligations to each and every member, not alone for the honor you have conferred by allowing me to add my mite in building the organization, but more especially for the hearty, loyal and enthusiastic assistance and co-operation which you have given, and the recollection of the many kindnesses and courtesies which you have extended to me during the past four years of my official position will always remain the brightest spot in my memory. I shall ever cherish them far more than you can realize.

To those who know me I feel that it is almost needless for me to add that although not holding any official connection with Kokoal, I shall in my private capacity always be found anxious and willing to do everything in my power to help push Kokoal forward. All I ask, as my last official request, is that you each give my successor the same earnest, cordial, enthusiastic support which you have so generously accorded to me.

Following is a summary of Kokoal Koruskations, giving the number of the Korkuskation, date, Skout, locality and number of initiates:

114, July 9, G. H. Reeves, Minneapolis, Minn., 21.
115, July 16, W. C. Williams, Louisville, Ky., 7.
116, July 11, C. B. Kinne, Buffalo, N. Y., 33.
117, July 23, G. A. Michell, Fairmont, W. Va., 6.
118, Sept. 25, P. Thompson, Springfield, Mass., 8.
119, Oct. 8, A. H. Beddoe, St. Louis, Mo., 12.
120, Oct. 10, W. L. Dennis, Oklahoma City, Okla., 8.
121, Nov. 4, C. L. Hall, Baltimore, Md., 35.
122, Nov. 25, D. B. Cunningham, Philadelphia, Pa., 20.
123, Dec. 5, J. Mitchellree, Toledo, O., 2.
124, Dec. 15, F. W. Feilenz, Milwaukee, Wis., 24.
125, Dec. 22, A. A. White, Boston, Mass., 4.
126, Jan. 29, A. J. Cochran, Indianapolis, Ind., 5.
127, Feb. 3, A. H. Beddoe, St. Louis, Mo., 3.
128, Feb. 4, W. L. Dennis, Oklahoma City, Okla., 12.
129, Feb. 24, G. H. Merryweather, Chicago, Ill., 20.
130, March 16, A. A. White, Boston, Mass., 5.
131, March 25, D. B. Cunningham, Philadelphia, Pa., 4.
132, March 27, W. G. Cronkright, Wheeling, W. Va., 5.
133, March 13, J. Mitchellree, Toledo, O., 14.
134, Dec. 17, T. F. Macksey, New York City, N. Y., 9.
135, April 30, A. H. Beddoe, St. Louis, Mo., 33.
136, May 18, F. G. Tice, Lexington, Ky., 14.
137, May 24, G. H. Merryweather, Chicago, Ill., 9.
138, June 16, A. W. McFarlane, Des Moines, Ia., 13.
139, June 25, Thos. W. Ayres, Harrisburg, Pa., 8.
140, July 2, A. H. Beddoe, St. Louis, Mo., 20.

DEATH OF R. M. MCDOWELL.

The death of Maj. R. M. McDowell, a pioneer coal producer and for many years identified with the coal industry of the South and West, was a shock to his friends of the Southwest. As a mark of their esteem the following resolution was adopted at the meeting of the operators and miners of the Southwest in St. Louis on July 9th:

"Whereas, the sad news has just been imparted to us of the death of Major R. M. McDowell, who for many years and until his retirement on account of age, has been long and favorably known to us as vice-president and general manager of the Western Coal & Mining Co. and fuel agent of the Missouri Pacific Railway Co. and in the personal quality of friend, associate and employer; it is hereby

"Resolved, That in joint conference of the coal operators and miners of the Southwest we hereby extend to the relatives and friends of Major McDowell our heartfelt sympathy and condolence."

The committee preparing the resolution comprised George Manual, Mose Clevenger, Robert Gilmour, W. J. Jenkins, J. H. Hibben, and Charles S. Keith.

COAL FROM ALASKA FOR CALIFORNIA.

Important industrial and commercial changes seem bound to occur on the Pacific slope if the prophecy of those familiar with the opening of coal mines in Alaska is fulfilled—that a plentiful supply of coal will be delivered in San Francisco for \$6 a ton. The supply of the slope has heretofore come from Australia, India, Japan and Wales and the market price has been for years in the vicinity of \$12 a ton. The development of the coal fields has been retarded by difficulty in obtaining titles, but the law passed by the Sixtieth Congress has made it possible quickly to obtain possession of lands containing the fuel.

SPRING VALLEY NO. 1 CLOSED.

No. 1 mine in Spring Valley, Ill., has closed down until the new escape shaft is completed. This shaft will not be completed for two or three months. The shut down is a direct result of the fire which destroyed Mine No. 2 on Dec. 31st last and has been smoldering in the ruins of the mine since that time. The fire threatened to come to the surface through the old No. 4 shaft which has been used as an escape shaft for No. 1 mine since the destruction of No. 2. The miners thrown out of work will be employed in the No. 3, No. 5 and Seatonville mines.

MINERAL WEALTH OF TENNESSEE.

Of all the States east of the Rocky Mountains, least is known of the natural resources of Tennessee. It is gratifying to note that the State is awakening to the importance of promoting the wise development of these resources, as evidenced in the passage by the last legislature of the bill for the establishment of a State geological survey. Though slow in recognizing the importance of this work now that it has come, along with a like awakening to the importance of public education, there is destined to take place in the near future a forward movement in economic and social conditions. Tennessee ranks eighteenth in the list of States in the value of mineral production for 1907.

RECORD HEAVY-WEIGHT TRAIN.

A record achievement in the movement of a heavy freight train has been accomplished on the Pennsylvania Railroad between Altoona and Enola, Pa. To determine what could be done in actual road service as the result of some of the company's recent expenditures for improvements, 85 steel gondola cars loaded with 4,451 tons of coal

were attached to locomotive No. 1113, a freight engine of the most improved type. The total weight of the train was 6,151 tons, and its length from the pilot of the locomotive to the rear platform of the cabin car was 3,000 feet—nearly three-fifths of a mile. The run of approximately 124 miles was made in 7 hours and 15 minutes, the average speed of the train being 17 miles per hour.

NEGRO ELECTED VICE-PRESIDENT.

The twelfth annual convention of the United Mine Workers of Alabama heard an address by National Vice-President E. S. McCullough and elected officers. J. R. Kenner was re-elected president and a negro named J. T. Sorsby, vice-president; Joseph L. Clemo, secretary-treasurer.

PROGRESS OF THE COKE MERGER.

The projectors of the proposed coke merger have now 86 plants under options but have failed to secure an option covering the operations of W. J. Rainey & Co., and the Cochrane interests. The latter refuse to give an option and under the provisions of the late W. J. Rainey that property is to be operated by the heirs for a period of 25 years. Negotiations are now going on for a working arrangement and price agreement with the Rainey interests. The appraisement is going on rapidly and the appraisers have been notified to make no totals of their figures at any plant but to maintain the utmost secrecy even to owners of plants they are appraising. It is considered that the merger can be made as something less than \$65,000,000.

FOUND ANOTHER COAL BED.

The Scranton-Buffalo Coal Company will operate again 3,000 acres of coal land in Mercer county, near Bethel, which was operated years ago and supposed to be exhausted. The resumption of the new-old enterprise will give work to 300 miners. When the coal industry subsided in that section of the county, Bethel, which was a prosperous borough, was deserted and the charter was surrendered, because there were not enough residents in the town to fill the borough offices. It is now stated that the town will be reoccupied. It is said that rich beds of bituminous coal have been found. A railroad several miles long will be built.

NEW MEXICAN MINES ENLARGING.

The Wootton Land and Fuel Company, J. Pierpoint Morgan, president, which has big coal mines seven miles from Raton, N. M., and which has recently secured a contract to supply the U. S. government with 800,000 tons of coal this year will be able to fill the order without any difficulty according to Col. J. A. Owenby, general manager. Col. Owenby furthermore says that there will be an improvement expenditure of \$115,000 during the next six months.

THE COAL REGIONS OF JAPAN.

Dr. Marie Stopes of London has just returned from a scientific trip through the coal regions of Japan. "The main object of my mission to Japan was to search for botanical fossils," said Dr. Stopes. "For eighteen months I traveled from one island to another hunting for fossils in the rich coal mines that abound in that country. Fruitful though my search was from the scientific point, what impressed me most was the respect and kindness shown me by the people. I visited places where no European had ever set foot before, the unknown regions of Yezo, and even the squalid villages of the superstitious, semi-civilized Ainus, and yet I was always treated with the utmost deference."

THE IMPORTANCE OF WATERWAYS IMPROVEMENTS

That the loss in a single year from the discontinuance of the operation of the canals at Sault Ste. Marie, Michigan and Ontario, would amount to between \$300,000,000 and \$400,000,000 in added freights alone, is a fact developed since the recent temporary loss of control of the waters of the Canadian Canal at that point. The engineers of the War Department furnish the figures which make it possible to reckon this loss and incidentally to throw a strong light on the value to the country of such aids to commerce as these canals.

St. Mary's River connects Lakes Superior and Huron and around its falls are built the canals. That on the Canadian side has one lock while the American canal has two locks side by side. A vessel jammed its way through the Canadian lock on June 9 and the torrents followed it and became uncontrollable. For two weeks the engineers of two nations were puzzled as to the manner of shutting off that flow but the feat was finally accomplished.

* * *

But before this had been done the question was raised as to what would be the result if the onrush could not be stopped and a similar accident happened on the American side. The answer as to freight advances were given in exact figures by government engineers who for years have kept tab on the freight that passes through these canals but the damage to business generally is beyond computation. The freight accustomed to these water rates would have had to go by rail and would have cost, on the basis of the figures for 1907, \$364,000,000, whereas by water the cost would be but \$38,000,000. These actual figures compiled by the government engineers show that freight hauled by rail that year cost $9\frac{1}{2}$ times as much as that handled by boat on the lakes. The prosperity of all that region tributary to the lakes has been developed because of these rates and depend upon them for its continuance.

The figures of the Engineers of the War Department show for 1908 an average cost per ton per mile on the Lakes of .69 of a mill, a reduction over the previous year and the lowest rate at which freight is transported at any place in the United States. The latest reliable figures for railroad transportation are gotten from the reports of the Interstate Commerce Commission and are for 1907. These figures show the average rate per ton per mile on the rail-ways to be 7.59 mills, or exactly 11 times as great as the rate on the Lakes.

* * *

Here again is shown a marked difference between water and rail traffic, for the one tends to decrease with development while the other shows no such tendency. Twenty-two years ago freight on the Great Lakes paid an average rate of 2.3 mills per ton. Each year since that time the waterways have been improved, channels and harbors deepened and the carriers as a consequence made larger. The result has been the clipping off of a small fraction of a mill on each ton each year until the present low rate of .69 mills has been reached.

The Great Lakes region has received more attention in the way of an improvement of its waterways than any other section and has profited accordingly. There is at present before Congress the proposition of laying down a policy for the improvement of all the waterways of the country that offer unquestioned possibilities, and a consequent carrying of the favorable freight rates of the Great Lakes to many sections of the country. A joint commission has been appointed by Congress and instructed to go

out and make a report as to how this may be done. The report will be submitted to the next Congress and action on the part of that body is expected to follow.

The question that most worries the legislative body is the matter of financing so monstrous an undertaking. In an attempt to solve this riddle the advocates of waterways have come to the conclusion that there is but one answer—the issuance of bonds. They cite the fact that the Panama Canal is being actually built upon this basis and that all private enterprise, such as railroad building, is always accomplished in this way. In fact there is no other way of accomplishing so great a task and further, they argue that the benefit is chiefly to posterity and posterity should help pay for it. These men are enthusiasts and hold that if the cheap rates offered by water transportation are ever going to be extended to the people it had as well be done now as later. Among the people none are found who are not willing to accept the low rates so provided.

WESTERN KENTUCKY COAL PRODUCTION.

In spite of depressed business, because of the panic, during 1908, the figures from the offices of the chief inspector of mines, count up well for coal production in the western district of Kentucky. The production by counties for the western district is reported as follows:

County.	Tons.
Butler	4,968
Christian	33,191
Daviess	52,058
Henderson	226,152
Hopkins	1,772,253
McLean	97,287
Muhlenburg	1,774,314
Ohio	602,316
Union	513,015
Webster	558,442

Total output of 1908.....5,634,596

COKE COMPANY TO MAKE SAUERKRAUT.

The largest producers of coke in the world, the H. C. Frick Coke Company, has gone into the cabbage-raising business, and later will branch out into the manufacture and sale of sauerkraut. Orders were issued by the farming department of the company to the several hundred farmers who furnish the company stores with supplies that each is to raise five acres of cabbage, the same to be turned into sauerkraut and shipped to the company's stores throughout Ohio, Pennsylvania and West Virginia. Sauerkraut is a favorite dish with the Frick employes, and last year there was a shortage when each farmer raised but two acres of cabbage. Each farmer will get two cents a pound for his sauerkraut.

TO DEVELOP 5,000 ACRES IN TENNESSEE.

The Tennessee River Coal Co. has been incorporated with a capital stock of \$800,000 for the purpose of developing 5,000 acres of coal land in Marion county, Tennessee. This company is now arranging to have a daily output of 2,000 tons of coal, and its engineer in charge is Crozier F. Kilpatrick, 35 Wall street, New York. Messrs. Lewis Earle, Friend Hoar and Howard W. Richardson of New York are directors of the company.

SOME LITTLE-TRODDEN PATHS OF HISTORY

The Original Gotham.

"Gotham" was first applied to the city of Manhattan in the book of humorous sketches "Salmagundi," written about 1807 by Washington Irving in collaboration with his brother Peter and the poet Paulding. It was intended to suggest that the people of New York made undue pretensions to wisdom. Gotham was a parish in Nottinghamshire, England, and the old story tells how King John wished to pass through the parish. The people there, fancying that the passage of the king over a route made it a public road, decided to prevent the transit by pretending to be crazy.

When the king and his party arrived they found every one of the inhabitants employed in some peculiarly foolish task. Thus, a group were joining hands around a thorn bush to keep a cuckoo from getting away, some very trying to drown an eel, others dipping water with a sieve and so on. When the king saw these performances he swore at the people for a pack of idiots and turning, departed with all his retinue. The Gothamites were delighted with the success of their scheme for turning aside the king, regarding it as superlatively clever.

After this Gotham came to have the reputation of being a sort of headquarters for conceited fools. In the time of Henry VIII a book entitled "The Merry Tales of the Mad Men of Gotham" was published. Among these was the story of the "Three Wise Men of Gotham," one of whose exploits was to go to sea in a bowl, briefly mentioned in nursery rhymes even to this day.

Origin of Right Handedness.

According to one good authority, Dr. Cunningham of London, this characteristic is of great antiquity, and was attained in the ordinary evolution of man by natural selection. But the condition does not reside in the right arm itself; for all the evidence goes to show that it is due to functional pre-eminence on the left side of the brain. This superiority of the left brain rests upon some structural foundation, the origin of which is not explained, but which is transmitted from parent to offspring.

Left handedness is due to the transference of this structural peculiarity from the left to the right side of the brain, or, more probably, to a transposition of the cerebral hemispheres, like that which sometimes occurs in the thoracic and abdominal viscera.

Potato Has a Great History.

The chronicle of one of the old Spanish travelers, published in 1553, says: "The people of Peru eat a tuberous root which they call papas." The Spaniards took this root to Spain, where it was grown as "the truffle root." The Italians very quickly adopted it into their gardens and soon the Dutch were cultivating it. Of its introduction into England all that we are sure of is that in 1586 Sir Walter Raleigh was growing potatoes in his Irish garden.

Thomas Harlot in his account of Virginia names potatoes among the roots that were found growing there, saying that some of them were as big as walnut and others considerably larger. This Virginia potato seems to have been that which is now known as the Irish, while that grown in Peru is more likely to have been a sweet potato.

Early in the seventeenth century Raleigh's plantation of potatoes had been repeated all over Ireland, but the farmers of England, moved by stubborn prejudice and possibly

in part by jealousy, decided that they would have nothing to do with the tuber. It was as late as the time of Charles II, certainly it was after the Cromwellian episode, before the potato got any fair hold in English soil.

The story of the introduction of the potato into France has been often told. The country people were so convinced of the poisonous nature of the tuber that they would not give it a trial. Its friends were actually mobbed for trying to introduce a food that would poison the people.

The Art of Crochet.

Few people are aware how the art of crochet originated and, like most artists, it owes its invention to nature. In the early part of the nineteenth century Mdlle. Riego, a French woman, was walking one day in the harvest fields. Her attention was struck by seeing the harvesters making a chain from the long straws which they knotted together on the points of their reaping hooks and when finished they tied the sheaves together with this novel binding. Mdlle. Riego was ingenious enough to evolve the art of crochet from this idea; she produced a small hook and tried what she could do with a chain of cotton, and gradually, thanks to her artistic skill and unwearied patience, crochet became a reality.

Origin of Plug Tobacco.

A Kansas farmer, while on jury service at Kansas City, said as he took a chew of his plug:

"All the difference in the world in tobacco. I've tried some twenty different kinds and none is as good as that we used to make ourselves down on the farm. We would take a maple log while 'twas green and bore a dozen holes in it with a two-inch auger. They were our molds. We selected our choicest tobacco and soaked it for a week or more in wild honey. Then we'd take the leaf to the log, get a good hickory 'tamping' stick and go to work.

"A little ball of the honey-soaked tobacco would be put in an auger hole and tamped in with the stick and a hammer. We'd pound it in solid. Ball after ball would be rammed in and pounded until the whole became a solid plug. When the hole was nearly full we would pound in the plug and then the log would be put away to season. As the wood dried the moisture would be drawn from the tobacco. And when it was split the sweetest tobacco ever made was taken from it. We called it 'plug' tobacco and that's where the name originated."

There's Many a Slip.

The proverb, "There's many a slip 'twixt the cup and the lip," is probably the oldest of all the familiar English sayings. Its origin is found in the following ancient Greek legend told by Lycophron. Ancaeus, the son of the god Poseidon and King of the Leleges of Samos, took great pride in his vineyards, and treated most harshly the slaves who worked them.

A prophet predicted that as a punishment for his cruelty he would not live to enjoy the wine pressed from his grapes. The harvesting and the winemaking passed in safety, and finally Ancaeus stood jeering at the prophecy with the first cup of wine in his hand. But the seer replied to the King's mockery "Many things happen between the cup and the lip." At that moment a wild boar broke into the vineyard, and Ancaeus, setting the cup down untasted, hurried off to direct the chase, in which he was killed.

HOW TO BURN LOCOMOTIVE FUEL COAL

A Paper Read Before the International Railway Fuel Association, June 23, 1909, by T. E. ADAMS, S. M. P.,
St. Louis and Southwestern Railway.

In a recent interview, under the head of Beginning Right, an ex-railroad official, now holding a responsible position in other fields of work, discussing the trials and tribulations of the mechanical department of railroads, said concretely that the crying need today was specialization if success was to be assured. This specialization should apply not only to the officers of the transportation department in a general way, but to the officers of the mechanical department particularly, whose education in this branch of railroad operation is as necessary, if not more so, than that of the rank and file.

One of the greatest resources that mother earth has brought forth for the use of mankind is coal, and strange as it may seem, there has never been a concrete idea as to what coal is and how to use it. We realize the necessity for this when we call to mind the meeting assembled by the President of the United States for discussing the preservation of natural resources; also the different papers read before different railway clubs, and other measures taken for the furtherance of this important question.

Would it be of interest to the railroads of this country if they could use mine-run coal and pull heavy trains, both passenger and freight, over long divisions without shaking the grates or cleaning ash pans, maintaining 200 pounds of steam throughout the trip, and preventing to a great extent the smoke nuisance?

It has been my privilege in the past twenty-five years, during a scientific and practical investigation of the coal question, to use coal from the following states: Pennsylvania, Ohio, Indiana, Illinois, Kentucky, Tennessee, Arkansas, Oklahoma, Iowa, Montana and Washington; and notwithstanding the wide territory from which the coal was taken, the different grades used and the variance of opinions to the contrary, it has been demonstrated beyond a doubt that the impurities in coal do not necessarily fill up the firebox with an accumulation of ash, or produce clinkers, if the coal is properly fired, although it is true some coal takes more careful handling than others to bring about the required results. These principles will apply to any of the fuel coals now in use.

It may be of interest to the members of this association to have me in a few words outline our policy. The first important step that was taken in my own experience as a locomotive engineer was to eliminate under all conditions the excuse of "poor coal," the character of the coal not being considered. I consider this the first step in the line of progress, and this, with other important methods, has been followed up to the present time and it is unnecessary for me to say that the improvements made on the line with which I am associated are a great source of satisfaction not only to the management but to the enginemen in general.

The clinking of coal is due to the manner in which the same is handled and not to the quality of the coal. It therefore must be understood by foremen in charge of engineers, hostlers, etc., that they must understand the principle upon which the desired results may be obtained.

At the several different places where switch engines are in use the business requires that they run continuously day and night, and if the engines come on cinder pit with badly clinkered fires it causes serious delay to switch engines to have same cleaned. In order to avoid this, it is necessary for engineers and firemen to understand that if the proper

depth of fire is established on the grate when the fire is new it will not be clinkered from this cause. Enginemen should be instructed that fires must not be shaken, when the fire is light, to prevent clinking.

Engineers, hostlers, firemen, etc., should all understand that when an engine has run an unusual length of time without fire being cleaned and the idea of not shaking grates has been carried out and the firebox has become filled with ashes and more or less unburned coal, it does not necessarily demonstrate that the fire is in bad condition and should be cleaned, but on the other hand should be shaken down to a depth of eight or ten inches, ash pan cleaned and the engine continued in service; and if the matter is handled in this way the condition of the fire on the grates will be much better than though it had all been cleaned out and a new fire established.

If the weather is at freezing point or colder, and the train is an unusually heavy one in freight or passenger service, they should understand the necessity of building the fire on the grate surface so that the required steam pressure will be maintained.

In case after leaving the terminal, when the fire has been prepared in the manner suggested, the engine does not steam freely, grates should not be shaken for the reason that there is more liability of fire on grates not being heavy enough to maintain the required steam pressure, or possibly not being spread over the entire grate surface, such as front corners and under flue sheets, etc. If the grates were shaken it would have the effect of rather increasing the difficulties instead of overcoming same.

Enginemen should understand the importance of these instructions, as they are the fundamental principles of the art of firing, which has been demonstrated beyond a doubt: that where an engine lags for steam it is due to the condition of the fire in the box and in almost every case the fire is either not distributed properly over the grate surface or it is entirely too light to suit the condition under which the engine is to be worked.

The principal thing to be understood in developing steam in a boiler freely is that the fire on grate surface must be maintained so that the air passing through it will be heated to a proper temperature to develop the steam pressure required, or otherwise the results will not be obtained.

In our talks with enginemen we wish these particular points brought out and thoroughly understood, and would further suggest that this matter be discussed at all times when convenient opportunities present themselves with a view of instructing enginemen on these essential points of having engines maintain their regular steam pressure and thus avoid delays, reductions of trains and the possibility of an entire failure.

For further information of the association I will say that these measures have been conducted along the line of a spirit of fairness, never having found it necessary to administer any discipline, and discussing the problem with the enginemen endeavoring to overcome mistakes.

For the purpose of using coal as nature intended it, in the interest of scientific principles and practical methods, and for the benefit of the owners, buyers and users of coal, I ask you to take at this time the first step in the great revolution which must surely come in the use of coal, and

while there may be some question about it now, future results will develop that the action taken by the International Railway Fuel Association was justified.

President Eugene McAuliffe submitted to the members of the association a brief explanation of the circumstances incident to the presentation of the paper read by Mr. Adams. In canvassing the list of subjects to be covered by papers for reading and discussion at this meeting, the executive committee did not deem it wise to attempt to cover the question of fuel economy, preferring to wait until the membership increased to a point that would enable them to secure a suitable committee capable of doing this important subject justice. After the list of subjects and committees were chosen, however, he received several communications from members and others urging that some competent member be asked to prepare a special paper on fuel economy. As a result, Mr. Adams was invited to write the paper on the proper method of burning locomotive fuel coal, which he had read. As Mr. Adams' presentation of fuel handling suggests a condition quite foreign to the opinions generally held, President McAuliffe requested the privilege of discussing the subject with him, to which arrangement he agreed. In support of Mr. Adams' arguments, he obtained letters which he thought cannot fail to carry conviction to the mind of any possible doubter.

These letters gave actual experiences, that of J. W. Blakeburn, Pine Bluff, Ark., Road Foreman of Engines, being a typical example. This letter in part said:

"For the past nineteen years I have been in the service of the St. Louis South-Western Railway Company. About fifteen years of that period I was in the engine service as fireman and engineer. During the entire length of time I was employed as a fireman, when for any cause we had trouble for steam; gave up our trains; cleaned fires on the road, and various other irregularities, we invariably made the report to the officials that the trouble was due to poor coal. This for the reason that we had learned the excuse was an acceptable one and no investigation would be made.

"After being promoted to the position of engineer, I carried out the same policy for a number of years, for the reason that it was understood by all the men that the easiest way to get out of such difficulties was to attribute the cause to poor coal.

"A little over seven years ago a change was made in the management, and we were advised to turn in our delays correct. At first we did not take the instructions seriously, as in many instances, we believed that the excuse of poor coal was the correct one. I, among the others, believed that I knew about as much about handling coal used on this system as any one else, and naturally resented the instructions which eliminated from our reports of steam failures

the cause, 'poor coal.' We fought the instructions personally and with our committees; but in the meantime some of us had begun to study, and it was an easy matter for us to recall many instances when we had charged a steam failure to poor coal that was due to condition of engine or the management. Observation also taught us that on some trips with the same grade of coal, we would clean ash pans two or three times over division, possibly clean fire and have a delay for steam. On the next trip, with the same engine, same coal, a different fireman would go over the road without cleaning ash pan, have full steam pressure over the entire division, and on arrival there would be no clinkers in fire box and a small percentage of ash. Some of the oldest men then began to realize that for years we had been covering up our own shortcomings and those of the shop force by attributing the delays to something that was in no way responsible for them.

"We found that by properly instructing our firemen; that by running the engine economically, if the machine was given us in good condition, we could make the trip without having trouble for steam; without cleaning fires on the road, and in many instances, making the trip without cleaning ash pan. This saved us a great amount of labor, and in getting over the division better, we had more rest at terminals.

"After two years of this policy, the majority of men on this system concluded it was the right one. Those who did not and would not try were forced to fall in line by the example set them, and today, on the territory from Texarkana to St. Louis, we do not receive reports of fires cleaned between terminals.

"This condition was brought about, first: By putting the engine in proper condition to make the trip. Second: By the proper instruction of men in the economical and intelligent use of fuel. Our men today would not wish to go back to the old, flimsy dodge of 'poor coal,' as an excuse for steam failures, for the reason that before long they would be cleaning fires, blowing up for steam, and having all the irregularities that we had prior to about seven years ago."

VIRGINIA IN NEED OF MINERS.

The demand for coal is so much greater that the Virginia coal operators are confronted with the possibility of a severe shortage of labor, in fact they are now having great difficulty in securing miners, though the scarcity has led to an advance of 15 per cent in wages. Business has increased very rapidly within the past thirty days. Labor agents are here hunting for men. During the time of dullness, many of the native miners returned to the farms and now have crops, which they cannot leave, while Hungarian and Italian miners went back to Italy by the thousands.

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WASHINGTON COAL IN 1908 LESS IN AMOUNT BUT HIGHER

The total production of coal in Washington in 1908, as reported to E. W. Parker, of the United States Geological Survey, was 3,016,557 short tons, having a spot value of \$6,673,091.

The record made by the coal-mining industry of Washington in 1908 was in pronounced contrast to that of the preceding year. In 1907, notwithstanding the increased production of fuel oil in California, the principal market for Washington coals, the production increased 404,348 short tons over that of 1906. Compared with the record output of 1907, the production in 1908 showed a decrease of 663,975 short tons, or 18.04 per cent. The value declined \$1,006,710, or 13.10 per cent, and the output was the smallest in any one year, except 1905 since 1903. Notwithstanding the fact that the decrease in production was due to the business depression, the average price per ton in 1908 showed an increase over 1907. The same increase in price was shown in other States and may be attributed to the fact that in periods of dull times buyers demand a higher grade of fuel.

The coal mines of Washington gave employment to an average of 5,413 men in 1908, a decrease from 5,945 men in 1907. The average working time decreased from 273


days in 1907 to 203 days in 1908, but the average daily production per man increased from 2.27 tons in 1907 to 2.74 in 1908, but because of the fewer number of days worked the total production per man for the year shows a decline from 619 tons in 1907 to 557 in 1908. In 1906 the average tonnage per man for the year was 723.4 short tons, and for each day 2.72 tons.

All the important mines of the State are operated on an eight-hour day. Out of a total of 5,413 men in 1908, 4,665 were reported as working eight hours. In 1907, out of a total of 5,945 men, 5,594 men worked eight hours. The labor difficulties in 1908 were limited to the strike of 226 men at the Wilkeson mines, in Pierce county. This strike began in November, 1907, and had not been declared officially off at the close of 1908. The mines continued to operate, however, although the production decreased approximately 50 per cent.

Four mining machines were in use in Washington during 1908, and the machine-mined product amounted to 20,000 tons. No machine-mined coal was reported in 1907. Somewhat over one-third of the total, or 1,098,879 short tons, of Washington's coal production in 1908 was washed at the mines before shipment. The washing yielded 859,942 short tons of cleaned coal and 238,937 tons of refuse.

According to D. C. Botting, the State mine inspector, the accidents in the coal mines of Washington during 1908 aggregated 104, of which 25 were fatal. Most of the fatal accidents were of a preventable character and must be attributed to the carelessness of the miners.

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A. D. 1909, at the hour of 11:00 o'clock A. M., pursuant to due notice, a Special Meeting of the Stockholders of the Deep Vein Coal & Coke Co., was held at the office of the Secretary, 1108 Fisher Building, City of Chicago, Cook County, Illinois, and a resolution unanimously adopted in favor of and providing for the voluntary dissolution of said corporation, and directing the officers of the corporation to abandon the corporate enterprise, and to surrender the charter, franchises and corporate name of the corporation; and that all of the corporate debts have been fully paid, and the corporate assets and property of said corporation distributed among the persons entitled thereto, as provided by law.

Dated, Chicago, Illinois, July 10, 1909.

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NEW MEXICAN COAL PRODUCTION IN 1908

The total production of coal in New Mexico in 1908 was 2,467,937 short tons, having a spot value of \$3,368,753, according to statistics collected by E. W. Parker, of the United States Geological Survey.

New Mexico did not suffer so much from the panic and business depression of 1908 as did some of the other coal-mining regions of the United States. The statistics compiled show that the actual decrease was 161,022 short tons, or 6.12 per cent, from 2,628,959 short tons in 1907 to 2,467,937 tons in 1908. The value decreased in somewhat greater proportion—from \$3,832,128 to \$3,368,753, a decline of \$463,375, or 12.09 per cent. The average price per ton declined from \$1.46 in 1907 to \$1.37 in 1908.

The amount of coal made into coke in 1907 was 498,279 short tons; in 1908 it was 450,114 short tons, an apparent decrease in 1908 of about 48,000 tons. The figures for 1907, however, cover unwashed coal; those for 1908 cover washed coal. The quantity of coke produced in New Mexico in 1907 was 265,125 short tons; in 1908 it was 274,565 short tons, an increase of 9,440 short tons. The coke manufacturers of the Territory, who had to depend on outside markets, were at a considerable disadvantage, as when the panic came in 1907 the Arizona smelters who did not suspend operations had large amounts of coke in storage and in transit. During the prosperous times of 1906 and 1907 from 300,000 to 500,000 tons of eastern coke had been

shipped into the southwestern territory, and as a large portion of this had not been used, there was a decided glut in the market during the first half of 1908. By the latter part of the year the accumulated stocks had been practically used up and the demand for New Mexico coke improved to some extent.

During the entire year there was an ample supply of cars, there were no strikes or other labor troubles, and the supply of labor was abundant. In New Mexico, as in the other coal-mining districts of the Rocky Mountains, the effects of the depression on the metal-mining industry threw a surplus of labor into the coal mines, so that notwithstanding the decreased production in the Territory, the number of men employed in the coal mines showed an increase from 2,970 in 1907 to 3,448 in 1908. The average working time decreased, however, from 209 days in 1907 to 197 days in 1908. The average daily production per man, which had decreased from 3.92 tons in 1906 to 3.29 tons in 1907, increased to 3.63 tons in 1908. The average production per man for the entire year (1908) was 716 tons, against 885.2 tons in 1907 and 949 tons in 1906. Most of the mines in the Territory were operated on a ten-hour basis. Fourteen mines, employing 3,015 men, reported ten hours as the length of the working day in 1908; 6 mines, employing 356 men, worked nine hours; and 5 mines, employing 30 men, worked eight hours.

Jo E. Sheridan, Territorial mine inspector, reports that during the calendar year 1908 there were 23 fatal accidents. In Mr. Sheridan's official report covering the fiscal year ended June 30, 1908, 34 fatal accidents are recorded. In 1907 there were three mining machines in use in New Mexico and 11,615 tons of coal were machine-mined. In 1908 there were seven machines, and a machine-mined product of 30,620 tons was reported.

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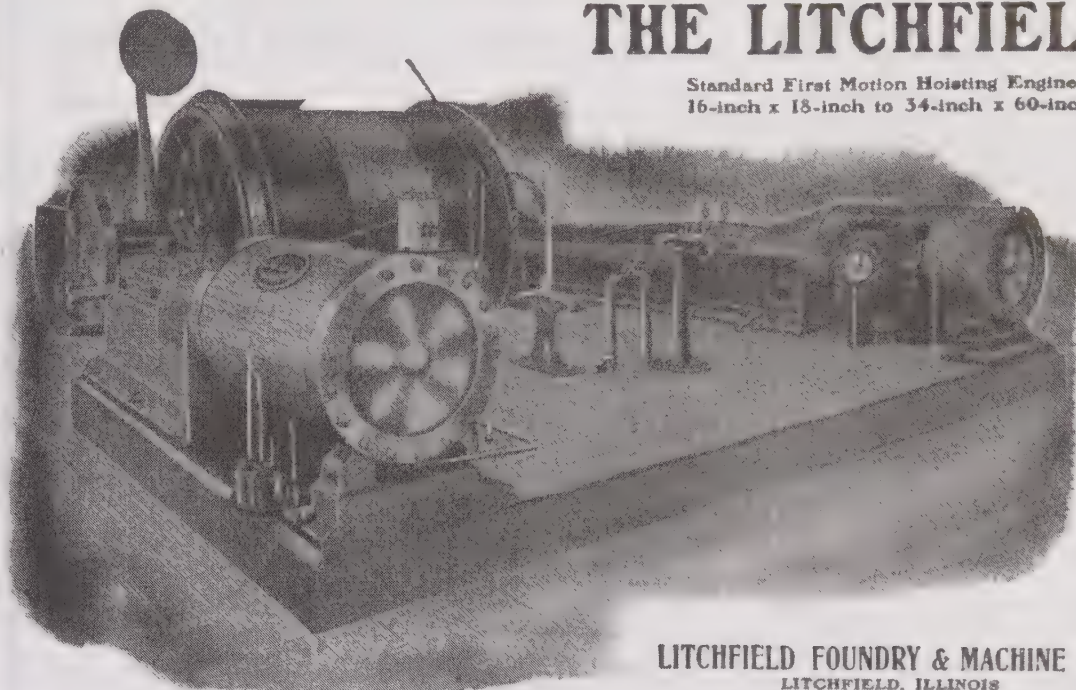
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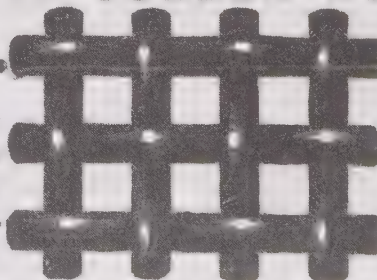
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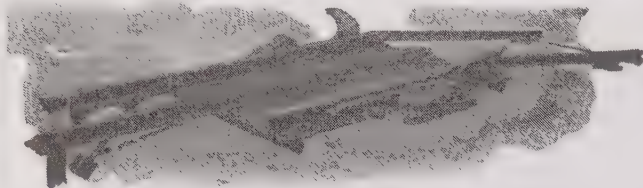
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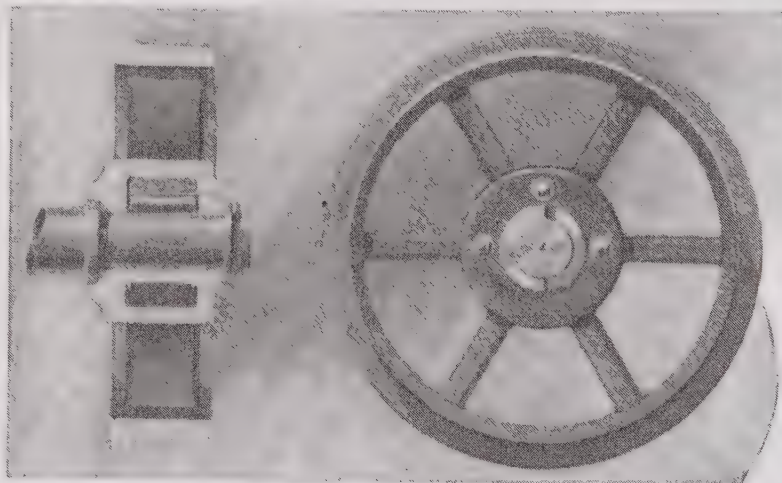
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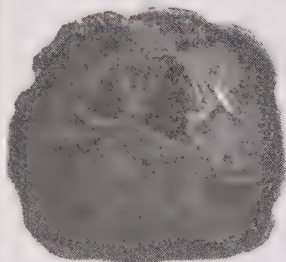
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A PREACHER'S SNAKE STORY AND SOME OTHERS

A Large Missouri Reptile.

An Arkansas City, Mo., man tells of a truthful citizen who was homeward plodding his weary way, following the river bank, when his gaze fell upon something that looked like a log, resting upon a sandbar. He eyed the log indifferently, but his indifference changed to astonishment and dismay when the log began to move, and opened a mouth that looked like the south end of a sawmill. The log proved to be a gigantic reptile, about thirty feet long. The truthful citizen made such time going home that his feet set fire to the grass.

Arkansas City pioneer, commenting on this snake story remarked: "That man is only a fairly good falsifier. In his enthusiasm, he overlooks the artistic unities, and thus his work seems rather coarse to connoisseurs." Now this is all very well as far as it goes, and we recognize in the yarn the strenuous efforts of a prevaricator whose soul is in his work. But what are we to think when the story ends feebly with the statement that he ran away.

Presbyterian Preacher's Snake Story.

"Snakes have a stimulating effect upon the imagination. One of the fiercest snake stories I ever heard was told me not long ago by a Presbyterian preacher, a thoroughly good man, who abhors falsehood and deceit in a general way. But he told me that he was driving down a steep hill when the breeching broke. The horse was young and skittish and when the buggy ran into it threatened to run away. The reverend gentleman hung onto the reins until his hands were raw and he was pretty near exhausted. He was just beginning to say 'Now I lay me' when the buggy retreated from the horse, the traces tightened, and danger seemed over. He looked to see what had caused this miracle, and found that a large bullsnake had thrown a coil or two about the spokes of one of the hind wheels and another around the side bar of the rig and had thus locked the wheel. The minister was so affected that he shed tears. Examining the snake carefully he recognized it as one that he had saved a few weeks before, when some wicked boys were trying to stone it to death."

Saloon to Offet Snake-Bites.

Tioga County, Pa., has long been known as the home of the "bellbird" or rattlesnake. They are very common there, particularly on the huckleberry mountains, where parties go and camp several days at a time, gathering the big blue berries and laying in their winter supply of rattlesnake oil, a common household remedy. There is a mining town in Morris township, about ten miles south of Williamsport, and so frequently were these poisonous Tioga county "singers" found about the mines that the town has been called "Rattler." There are rattlesnake stories told about the settlement of the place that make one's blood run cold—how a woodsman awoke and found one in bed with him, and another coming into a log stable at night slammed the door after him on account of a storm and a big yellow fellow was jarred off the beam over the door and dropped about his neck like a necklace.

A prosperous little town has grown up about these mines and an enterprising citizen has applied for a wholesale license, against which there is said to be no remonstrance, despite a strong prohibition sentiment. Among the arguments advanced for the necessity of a license at "Rattler"

it is said that the liability of the inhabitants to snake bites is so great that a plentiful supply of the never failing popular remedy as a preventive and cure is an absolute necessity.

Snakes in Battle Royal.

A battle for life between a black snake nearly four feet long and a small green snake was witnessed by Walter J. Riolo, a farmer near Vineland, N. J., who watched it like one in a trance. After striking several times the black snake seized the green about five inches below its head. The small snake, evidently anticipating being swallowed, gripped its tail tightly around a tree root. Then followed a battle royal. To keep from being swallowed the green snake threw its head back and seized its own body and held fast. Gradually the black worked his way up to the head of the green and, forcing the head loose, began swallowing. Inch by inch the big fellow gulped down the wriggling green snake, which, however, held its tail hold on the root.

When the black had swallowed to within a few inches of the tail, Riolo thinking to kill both to preserve as a rare specimen, struck at the black, but missed. The black noticing the man for the first time, quickly disgorged the green snake, which glided away, evidently relieved. The black snake showed great anger at being disturbed and put up a vicious fight, trying to throw itself on the farmer and hissing loudly until it was killed.

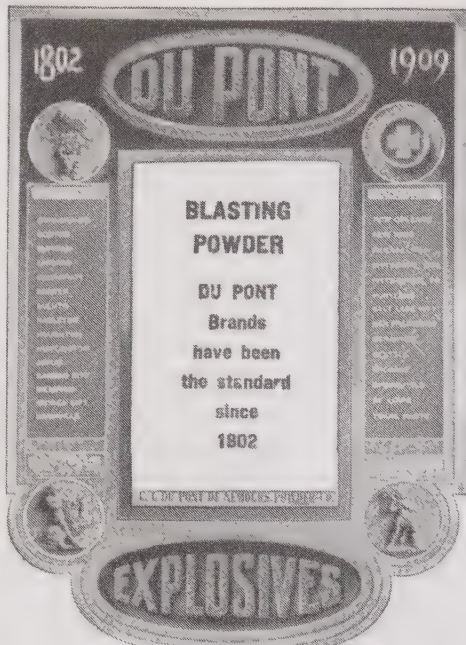
Rattlesnakes Sold at Wholesale.

San Antonio, Texas, is said to be the largest wholesale snake market in the United States, and the fact that there are three wholesale snake houses in the city which do a land office business, besides several smaller houses, goes to prove this statement. These houses handle all kinds of snakes known to Mexico and West Texas, but rattlesnakes are their principal stock in trade. Hundreds of men in northern Mexico and west Texas make their living catching rattlesnakes. They catch other kinds of snakes when they find them, but rattlesnakes bring the best prices on the market. The price obtained for rattlesnakes by the men who catches them ranges from \$1.25 to \$2.50 each, and the snakes are in constant demand. The rattlesnake dealers ship them to all parts of the world. Every nation on earth is said to use some part of a rattlesnake. From the snake fat, oil is made which brings a good price on the market. It can be used for many purposes, but is sold for rheumatism oil, and is said to be effective in dispelling that disease.

The rattlesnake hides are tanned and made into leather which very much resembles kid. In fact, it is said to be the easiest tanned and most durable snakehide on the market.

Facts About Snakes.

Some serpents swallow their young for temporary protection; some snakes play "possum" or act dead as a means of defense; some snakes lay eggs, others bear young; fangs of serpents are renewed or grow in again after being extracted; the young blacksnake is gray and spotted and often mistaken for the spotted adder, water snake or copperhead; snakes can live a year or more without food; some species of snakes are beneficial as insect eaters and others as destroyers of mice and other obnoxious rodents, as mice and rats; two-headed snakes are not uncommon; snakes and other reptiles are not "cold blooded" but are the temperature of their surroundings.



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Vol. XIII. No. 12.

CHICAGO, ILL., JULY 20, 1909.

Price \$2 Per Year.

THE EXPLOSIVES TESTING STATION

Clarence Hall, Expert in Charge of the Explosives Section of the Work at Pittsburg, Gives Details of the Equipment and the Preliminary Results of Tests That Have Been Made.

A Paper Read Before the West Virginia Coal Mining Institute at Elkins, W. Va., June 2, 1909.

In FUEL last week was printed an interesting account by State Mine Inspector James Taylor of the visit of members of the Mine Inspectors' Institute of America to the testing station at Pittsburg and of the demonstrations of the method of work at the station. FUEL's readers will be pleased to read the following carefully prepared account of the equipment of the station and the preliminary results of tests. Mr Hall is an admitted expert, and in this paper gives a full and accurate description of the apparatus and how it is used.

The tests at the explosives station of the Mine Accidents Division U. S. Geological Survey, Department of the Interior, are both chemical and physical. The chemical tests include the analyses of the explosives, the chemical examination of the products of combustion, stability and exudation tests and other tests necessary to determine the effects of storage and the keeping qualities of explosives. The physical tests are conducted in:

- (1) Gas and Dust Gallery No. 1.
- (2) Ballistic Pendulum, and on the following pieces of apparatus installed in building No. 17, for the determination of various physical factors.
 - (3) Trauzl lead blocks.
 - (4) Small lead blocks.
 - (5) Calorimeter.
 - (6) Rate of detonation of high explosives.
 - (7) Flame test apparatus.
 - (8) Impact machine.
 - (9) The determination of the maximum distance of propagation of the explosive wave.
 - (10) Rate of burning of slow explosives.
 - (11) Bichel pressure gauge, and
 - (12) Black powder separator.

Gas and Dust Gallery No. 1.

Gas and dust gallery No. 1 is cylindrical in form 100 feet long and has a minimum internal diameter of 6 ft. 4 inches. It consists of 15 similar sections each 6 ft. 8 inches long and is built up in in-and-out courses. The first 3 sections nearest the concrete head are made of half-inch boiler plate steel; the remaining 12 of $\frac{3}{8}$ -inch boiler plate steel of at least 55,000 lbs. tensile strength per square inch.

Each section has one release pressure door on top equipped with a rubber bumper to prevent its destruction when opening quickly. In use, this door may be either closed and unfastened, closed and fastened by means of stud bolts, or left open. Each section is also equipped with a $\frac{3}{4}$ -inch plate glass window 6x6 inches. All windows and doors are centrally placed.

The sections are held together by a lap joint. At each lap joint there is on the interior of the gallery a 2½-inch circular angle iron upon the face of which a paper diaphragm

may be placed and held in position by semi-circular washers, studs and wedges. These diaphragms are used to assist in confining the gas and air mixture.

The natural gas used is from the mains in the city of Pittsburg, a typical analysis of which is as follows:

Carbon dioxide	0.0
Oxygen .....	.2
Heavy hydrocarbons .....	.0
Carbon monoxide .....	.0
Methane	85.3
Ethane	11.8
Nitrogen	2.7

100.00

The volume of gas entering is measured by a very accurate test meter reading to 1-20 of a cubic foot. The gas enters the required division (3 sections) or divisions of the gallery near the bottom from two-inch perforated gas pipe 14 feet long. The perforations are so arranged that an equal flow of gas is maintained from each unit length of pipe.

Each division is further equipped with an exterior circulating system, providing an efficient method of mixing the gas with the air. For the first division this circulating system is stationary, a portion of the piping be equipped with heating coils for maintaining a constant temperature of the mixture. All other divisions have a common circulating system mounted on a truck which may be used on any one of these divisions. Valves are provided for isolating the fan so that a possible explosion will not injure it.

The center section of each division is provided with an indicator cock, which is used for two purposes: (1) For indicators to record pressure above and below atmosphere; (2) For providing an opening where samples of the mixture may be procured. All divisions of the gallery are equipped with shelves laterally arranged for coal dust.

The cannon in which the explosive is fired is imbedded in a concrete head, the axial line of the bore hole being coincident with the axial line of the gallery. The cannon consists of two parts: a jacket and a liner. The jacket is 36 inches long, 24 inches external diameter and 9½ and 7½ inches internal diameter and is made of best cast steel, cast iron or Vanadium steel. The liner is 36½ inches long, with a one-inch shoulder 7¾ inches from the back, changing the diameter from 9½ to 7½ inches, having a smooth bore 2¼ inches in diameter and 21½ inches deep. The face of the cannon is even with the face of the concrete head.

The charge is fired electrically from the observation room and that the risk of charging may be minimized, the charger carries in his pocket the plug of a stage switch

which (this being the only one of its kind on the grounds), so that it is impossible to complete the circuit until the charger has left the gallery.

The portion of the first division of the gallery which is not in concrete has a 3-inch covering, consisting of blocks of magnesium, asbestos fibre, asbestos cement, a layer of six-ounce duck, and then a dry proof roofing, and the whole covered with a thick coat of graphite paint; all this, of course, to assist in maintaining a constant temperature.

The entire gallery rests on a concrete foundation 10 feet wide, has a maximum height of 4 feet six inches and a minimum height of two feet.

The concrete head in which the cannon is placed completely closes that end of the gallery. A narrow drain extending under the gallery its entire length and a tapped hole at the bottom of each section provides an efficient method for drainage.

The buildings near the gallery are protected by two barricades near the open end of the gallery, each 10 feet high and 30 feet long. A back stop six feet high and nine feet long, 50 feet from the end of the gallery prevents any of the stemming from doing damage.

The tests in the gallery are witnessed from an observation room, a protected position about 60 feet from the gallery. The walls of the room are 18 inches thick and the line of vision passes through a half-inch plate glass six inches wide and 37 feet long, and is further confined by two external guards, each 37 feet long and three feet wide.

When humidity tests are run in gas and dust gallery No. 1, the apparatus is further equipped as follows: To the 14-inch doorway of section No. 1 is connected by suitable boxing a Reperting Exhauster of 240,000 cubic feet of free air per hour capacity. No. 15 doorway is used as the air inlet and to it is connected by suitable wooden boxes a compartment that contains steam radiators and humidifiers. Three 38-inch triple column radiators (two 23 panels and one 16 panels), averaging 310 square feet of heating surface are arranged with valves to control the quantity of steam flowing through them and are enclosed in a tight wooden box, approximately 2 feet 10½ inches by 3 feet 7 inches by 5 feet 5 inches. The air enters this box through a rectangular hole 10x12 inches in the end of the box, also through 25 round holes 2 inches in diameter. A baffle board 12 by 19½ inches is set inside the box opposite the large opening to more evenly distribute the current of air over the surface of the radiators. The air leaves this warming box through a 11¼ by 30 inch opening and is carried upward by suitable boxing to a compartment 3 feet 8¼ inches by 12 inches by 14 feet 2½ inches, which contains the humidifier heads. From here it goes through No. 15 doorway in the top of the gallery; the end of the gallery being efficiently closed by brattice cloth and paper diaphragms.

Ballistic Pendulum.

The ballistic pendulum is for the purpose of measuring the unit disruptive force of various explosives. The unit disruptive force of explosives thus tested is defined to be the force required to swing the pendulum an amount equal to a swing produced by a charge of half a pound of 40 per cent nitro-glycerin dynamite, used as a standard.

The apparatus consists of a mortar weighing 31.600 pounds, suspended on knife edges and a steel cannon mounted on a truck on a track, which is laid parallel with the direction of the swing of the mortar, and which, at the time of firing, may be placed 1-16 of an inch from the muzzle of the mortar. The mortar is suspended from a beam supported by concrete walls 130 inches high, 51x121 inches at the base. On the top of each wall is a base plate anchored to the wall. The knife edges rest on bearing

plates placed on top of these base plates. Each bearing plate is provided with a small groove for the purpose of keeping the knife edges in oil and protecting them from the weather. Each knife edge is 6 inches long and the bearing surface is rounded to conform to a radius of ¼ inch. The mortar rests on two "U"-shaped saddles which pass through heavy steel castings bolted to the beam. The vertical distance from the point of the knife edges to the center of the trunnions of the mortar is 89¾ inches.

The cannons used on the truck are similar in size and material to those used in Gas and Dust Gallery No. 1. The truck consists of 4 wheels set to a 30 inch gauge and the track extends about nine feet from the muzzle of the mortar to the bumper.

The shot is fired from the first floor of building No. 17 about 10 yards from the Pendulum, by means of an electric firing battery. The man who charges the cannon carries a safety plug from a stage switch when working and is thus protected in the same manner as the charger at Gas and Dust Gallery No. 1.

A recording device is placed at the back of the mortar, which is connected to the mortar by means of a horizontal rod at the end of which is a circular face. A lug inserted in the bottom of the mortar directly below its center of gravity pushes this rod, which transmits the length of the swing to a scale at the other end of the rod, which by means of a Vernier records the length of swing to the 1-200 part of an inch.

Trauzl Lead Blocks.

The Trauzl lead block test is the method adopted by the Fifth International Congress of Applied Chemistry as a standard for measuring the unit disruptive force of explosives. The unit disruptive force of explosives thus tested is defined to be the force required to enlarge the bore hole in the block an amount equal to that produced by 10 grams of standard 40 per cent nitro-glycerin dynamite and stemmed with 50 grams of dry sand under standard conditions as produced with a tamping device. The result of these tests when compared with those of the Bichel Gage indicates that for explosives of high detonation the lead block is quite accurate, but for slow explosives the expansion of the gas is not fast enough to make comparative results of value; the gases escaping from the bore hole of the block rather than taking effect in expending the bore hole.

The lead blocks are cylindrical in shape, 200 millimeters in diameter and 200 millimeters high. Each has a central cavity, cylindrical in shape, 25 millimeters in diameter and 125 millimeters deep, in which the charge is placed. The blocks are made of desilverized lead of best quality, and as nearly as possible under identical conditions. The charge is placed in the cavity and prepared for detonation with an electric exploder and stemming. The yoke is not used and no additional attempt is made to further confine the charge. The bore hole after the explosion is pear shaped, the size of the cavity depending not only upon the disruptive power of the explosive, but also upon its rate of detonation as described above. The size of the bore hole is measured by running in water from a burette until the cavity is just full. The difference between the size of the cavity originally and after detonation being, of course, the enlargement produced by the explosion.

Calorimeter.

The explosion calorimeter is designed to measure the quantity of heat given off by detonation of explosive charges of 100 grams. The apparatus consists of a calorimeter bomb, the inner receiver of immersion vessel, and wooden tub, a registering thermometer and a hooking frame. This

(Continued on Page 344.)

PETROL AIR-GAS, THE NEW BRITISH ILLUMINANT

In consequence of the wide publicity given by the American press to a report on petrol air-gas transmitted by United States Consul Joseph G. Stephens from Plymouth, England, that gentleman has written another report giving much further information about the new British illuminant. As a result of the interest awakened by the former report Consul Stephens has received over two hundred letters of inquiry for further facts, these inquiries coming from all quarters of the United States as well as Canada, Cuba, South America, and India. A more extended and thorough investigation was therefore made by him of this new process of artificial lighting, the result of which investigation has been embodied in the following:

Petrol gas is not a novelty. For nearly 50 years it has been made with a certain measure of success in the laboratories of Europe, but until recently it could not be manufactured on a large scale, owing principally to condensation. It is an artificial gas, and as soon as the air with which it is mixed contracts condensation takes place. To blow air over or through the volatile liquid, and so make gas, and by means of different regulators attempt to control the quality of the gas are not sufficient. This mistake has led to the multiplicity of machines and the loss of much money.

Statements of Experimenters.

Reporting to a London syndicate, Prof. Vivian B. Lewes writes:

"Many forms of gas machines have been invented, in all of which air has been converted into combustible gas by the evaporation into it of hydrocarbon vapors, but two factors have led to failure when working on a large scale. In the first place, the hydrocarbons obtainable on a commercial scale consisted of mixtures of compounds having varying vapor tensions, so that the most volatile evaporated first and overenriched the air, while the less volatile, being left behind in the carburetor, gave a gas of a poorer quality. This trouble has at the present time practically disappeared, the demand for petrol for motor cars having led to hydrocarbons of comparatively uniform quality being put upon the market in considerable quantities. The second trouble was more serious, and was that as the hydrocarbons volatilized the evaporation produced intense cold, and so lowered the temperature of the carburetor as to check the volatilization of the enriching liquid, and, as a consequence, the gas produced varied so much in composition as to make it impossible to obtain a uniform light, and this trouble became more noticeable when the gas was used with incandescent mantles."

Monsieur De Laitte during his experiments in connection with submarine work for the French Government found a means by which this lack of uniformity is ingeniously overcome and the gas produced at a temperature many degrees below freezing point. This is done by means of a carburetor immersed in water, the water being kept in constant movement by automatic means. Each evaporation in the carburetor produces intense cold, but the carburetor is restored to a natural heat by the water with which it is surrounded.

Movements of the Air.

The warm expanded air of summer will hold less petrol than the cold contracted air of winter, but if the air and petrol are mixed under these freezing conditions the amount of vapor taken up with a given measure of atmosphere will remain constant. This will absolutely avoid

condensation. Gas made by this process can be passed through glass piping immersed in ice and it will not condense.

When air is blown over or through quantities of petrol, the most valuable and volatile gases are taken off first, and the sluggish gases remain behind, so that variation of richness has again to be considered. To obviate this difficulty the petrol must be served down the carburetor in measured quantities commensurate with the speed at which the gas is being produced and consumed. In this way an exact degree of richness is obtainable, viz., 4 per cent, more or less, of petrol vapor to 96 per cent, more or less, of air.

Instead of blowing air over or through the gas, it has been determined that more satisfactory results are obtained in sucking the measure of petrol and air through the carburetor by means of a drum revolving in a water jacket, on the principle of a water meter. The drum has three compartments, each of which in turn empties itself of water, sucks in its charge of gas, and again, in revolving, by the entry of water, discharges the gas into the gasometer.

Another point of vital moment is that the air must be dry before it is admitted to the carburetor. Natural air saturated with moisture can not absorb the same quantity of petrol as dried air, and as the atmosphere varies from day to day so would the gas vary in its degree of richness but for the fact that there is provided a calcium-chloride chamber through which the air is drawn and in which all the moisture in it is extracted.

Mixture and Combustion.

Gas manufactured under heat must condense in the pipes. Just as a cold water pipe, passing through a hot room, will condense the moisture of the room on the outer surface of the pipe, so will a hot, expanded gas, going through a cold pipe, cause a condensation of petrol on the inside of the pipe, and so also will the natural moisture in the undried air, mixed with petrol, condense water into the pipes.

The using of dry air and the exact proportion of petrol and air in admixture enables the maximum volume of air to be made, so that, for lighting purposes with mantels over nine hundred cubic feet of gas can be made from one gallon of petrol. The cost of petrol in England is eleven pence (22 cents) per gallon retail.

The gas contains all the air needed for its own combustion, and so removes no oxygen from the air of the room in which it is burning, while coal gas needs six cubic feet of air for each foot of gas consumed. By reducing the percentage of petrol vapor any further admixture of air renders the gas non-explosive, so that no explosion can result from leaving a burner turned on, as would be the case with any other inflammable gas. Further, owing to the completeness of combustion, no soot is deposited, and the ceilings and decorations of a room remain clean.

The machine embodying the process herein described is compact and simple in construction, and can be worked automatically by weights, electricity, or water pressure, and is so arranged that it can be attended to by any unskilled person. The size of a 30-light machine is: Length, 40 inches; width, 32 inches; height, 48 inches.

Further particulars on the subject of petrol air-gas lighting and heating and the plant referred to in this article can be obtained from a firm the name and address of which is filed at the Bureau of Manufacturers, Department of Commerce and Labor, Washington.

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Official Paper of the Western Kentucky Coal Operators' Association—I. P. Barnard, president, Louisville; F. P. Wright, vice-president, Bevier; D. Stewart Miller, commissioner, Owensboro.

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Essentials to the National Well Being.

GEORGE WASHINGTON.



HERE are four things which I humbly conceive are essential to the well-being—I may even venture to say, to the existence—of the United States as an independent power. First, an indissoluble union of the States under one federal head. Secondly, a sacred regard to public justice. Thirdly, the adoption of a proper peace establishment, and, fourthly, the prevalence of the pacific and friendly disposition among the people of the United States which will induce them to forget their local prejudices and policies; to make those mutual concessions which are requisite to the general prosperity; and, in some instances, to sacrifice their individual advantages to the interest of the community.

The city of Saginaw, Mich., had a bid of \$2.75 per ton for coal for the waterworks from a Cincinnati firm, but over a thousand union mine workers and as many more members of the Federation of Labor petitioned the City Council not to award the contract and to buy home-mined coal at 75 cents a ton more. The City Council turned down the bid, caring more for home industry than for cheaper coal.

THE TIME TO ADVERTISE.

The past two years have been lean ones for the coal operators, and the plants have been barely able to make expenses, some of them falling short of that mark. But with the revival of business they are compelled to begin repairs which have become necessary on account of the run-down condition of machinery and equipment. The advertiser who objects to advertising at the present time and assigns as a reason the paucity of orders from the coal operators evidently does not consider the fact that the coal operators are in the same position as the vast majority of the other lines of business in that respect.

Orders have been few from all lines, and in the case of the coal operators the depression has been more marked even than in the case of the others. They have had to maintain their plants in condition to do the small business that has been possible, but have not enlarged or added to their equipment. The necessity has been keen for closest economy and as a consequence the plants have depreciated until practically every mine in the State of Illinois, as well as elsewhere, is in need of something. These needs must be supplied before the coming business can be cared for, and operators are now looking around for the best terms and the best machinery for their purpose. They will naturally be interested in the firms that esteem their business of sufficient importance to ask for it. The assumption that the coal operators will remember the names and addresses of firms who used to advertise is not well founded, for in these days of change many things happen in two years.

There is but one secret of success, and it is true in advertising as in everything else—it is keeping everlastingly at it. The advertiser who keeps his name before the public is the advertiser who wins, and the advertiser who advertises spasmodically is the one who grows discontented. The firm that uses a page every three months is not apt to get the results attained by the advertiser who keeps standing a smaller card in every issue. The man who wants machinery and mine equipment looks in the latest issue of the papers he uses, not in the back volumes, for the trade journal is not, as a rule, preserved and filed. As you can never know when the operator is going to be requiring new machinery, the only way is to keep on advertising. The most successful firms in the world today are the largest advertisers. How long, though, would the business success continue to attend a certain popular soap or a certain brand of biscuit which everyone is supposed to need in their daily walks of life, if the advertising were stopped?

FUEL goes to the coal operator, to the purchasing agent, to the mine manager, to the mine superintendent, and these are the men who know what they need and do the buying. It is up to the manufacturer who wants a part of the reviving business to ask for it, and to ask for it from the men who decide where the business will be given. For seven years FUEL has been the recognized worker for the up-building of the coal industry along lines of permanence and stability. It has had no disposition to keep silent or to speak for any other reason than the good of the coal producing industry, nor will it ever have. No coal journal is so widely

quoted today, because it speaks whereof it knows.

The point should be perfectly clear to the discerning.

THE SETTLEMENT IN WEST VIRGINIA.

The result of the special convention held in Charleston, W. Va., to hear the charges brought against District President Ben Davis of the United Mine Workers resulted in his complete exoneration by the convention. National President Lewis presided, and the hearing was full. It will be remembered that the charges were brought by five local unions and grew out of a compromise made by Davis when a strike threatened to tie up every mine in the district where union miners were employed. These locals claimed that the district officials had exceeded their authority and the charges embraced all of them, the insistence being that they should either resign or be removed from office. The mining situation in West Virginia was fully discussed by delegates and by visitors who were not delegates, every opportunity being given all who wished to be heard.

FUEL believes that the action of the convention in sustaining the action of their officers was wise, and that it was in line with the advanced idea of real labor unionism. There are times when the test of leadership is to make the best of an unpromising situation, and this was one of the times. Radical action could easily have disrupted the miners' organization in the entire district, and have put the day still farther away when the idea of unionism might have any chance to be prominent. West Virginia is so well known to be inimical to labor unions that every unprejudiced observer thought President Davis did well to arrange the terms he did. National President Lewis' comment on what was done will be of interest in this connection. He says:

"While mistakes may have been made, the conditions of the mining industry was indirectly the cause that led up to the recent strike in the Kanawha district and established a condition that threatened the friendly relation that existed between the operators and the miners of the Kanawha district for a number of years.

"The action of the convention by an overwhelming majority decided that the charges should not be sustained. At the close of the convention the very best feeling prevailed, and those delegates that represented local unions that filed charges, pledged themselves in open convention to return to their constituents and work for the success of the organization and support the officers of the district in carrying into effect the policy of the United Mine Workers of America.

"Everybody at the convention seemed pleased and happy with the outcome and there is no doubt but that the work of the convention will be of lasting benefit to the mining industry of this section of the state."

George Sealey, formerly City Smoke Inspector of Cincinnati, believes he has found a solution of the smoke problem in the perfect combustion arising from burning coal by simply introducing a jet of burning gas into the fire chamber over the bed of coal. The theory is that the gas flames will consume the gases that have escaped from the coal so that there will be no smoke whatever. It is said that the expense of installing the burners will be small and that the expense of the gas consumed will be small also where nat-

ural gas is available. Gas burners adapted to this use are already available, permitting the flow of gas to be directed wherever needed.

The retail coal dealers have made very little money for some time past. If the example of dealers of certain towns in cutting prices be generally followed it will be some time before they do make any.

DENY EXISTENCE OF A COAL POOL.

The coal carrying railroads concluded their presentation of evidence in defense of a suit brought by the government under the anti-trust law June 30, with the submission of testimony by President E. B. Thomas of the Lehigh Valley Railroad Company and President William H. Truesdale of the Lackawanna. Hearing was then postponed until September. Mr. Truesdale denied the existence of a rate agreement between the anthracite roads. He admitted that representatives occasionally discussed selling prices. The Lackawanna, he testified, had not made a rate reduction since 1903. Mr. Thomas likewise denied that there had been an agreement between the roads to curtail the output of coal or fix its price. He said that a tentative agreement was reached by the presidents of the anthracite roads at a meeting in 1896 as to the percentage of coal to be carried by each road, but this agreement was never kept.

SMELTING WITH PIG IRON ANTHRACITE.

The recent Fourth of July was the anniversary of an important industrial accomplishment—the smelting of pig iron with anthracite coal. This was first done on July 4, 69 years ago, in the small furnace of the Crane Iron Works, at Catsauqua, under the supervision of the late David Thomas, who was the pioneer in the manufacture of iron by the use of hard coal. Several attempts to accomplish it had been made previously in other parts of Pennsylvania with some degree of success, but it remained for David Thomas to make not only a mechanical, but a commercial triumph of the undertaking. In 1840 less than 1,500 tons of anthracite pig iron were produced in the United States.

LABOR SCARCE IN COKE REGION.

In the production of coke in the Connellsville region during the last week in June, there was an increase of 14,000 tons over the preceding week, but there was a decrease of 85 cars in shipments. The total production for the week was 320,000 tons and the shipments of 11,325 cars. In some places it was necessary to place ovens out of blast on account of the scarcity of labor. This was notably the case at the W. J. Rainey Royal Works, where 50 ovens were closed because of an insufficient number of men to operate them. Laborers are needed in all parts of the coke region.

JERUSALEM LIKewise DAMASCUS!

Two notables of Jerusalem, according to Levantine newspapers, have applied for the concession for furnishing Jerusalem with electric light and building an electric tramway between Jerusalem and Jaffa.

The daily receipts of the electric tramway in Damascus average 40 Turkish liras (\$176). At present only one line is in operation, but a considerable expansion of the system is under preparation. Electric light has been introduced into 450 places of residence and business in Damascus. The streets of the city are lighted with 1,000 electric lamps, while the Serail, the city hall, and the Grand Mosque are served gratis with electric arc lights.

DECLINE IN PRODUCTION IN ALABAMA COAL

The total production of coal in Alabama in 1908, as reported to E. W. Parker, of the United States Geological Survey, was 11,604,593 short tons, having a spot value of \$14,647,891. The effect of the business depression was exhibited by a decrease of 2,645,861 short tons, or 18.57 per cent, in quantity, and of \$3,757,577, or 20.42 per cent, in value, as compared with the output of 1907. Nearly half of the decline in production was in the quantity of coal made into coke, this item having decreased from 4,973,296 short tons in 1907 to 3,875,791 short tons in 1908.

Alabama is peculiarly favored in its ability to manufacture cheap iron, although the ores are not of so high a grade as those from Lake Superior, which feed the furnaces of the more northern States. Because of these conditions Alabama's proportion of iron production is usually larger in years of depression than in flush times. This is illustrated by the statistics of pig-iron production in 1908, which show that Alabama's output was 17 per cent less than in 1907, while in Illinois the percentage of decrease was 31 per cent; in Virginia, 33 per cent; in Pennsylvania, 38 per cent; in Ohio, 45 per cent; in Maryland and West Virginia, 65 per cent; and the average for the entire United States, 38.2 per cent. Had the production of pig iron in Alabama shown as large a decrease as that in other States the falling off in coal and coke production would have been materially greater.

The prices of coal in Alabama were fairly well maintained during 1908, the average price per ton showing a decrease of only 3 cents, from \$1.29 in 1907 to \$1.26 in 1908.

The total number of men employed in the coal mines of Alabama in 1908 was 19,197, and the average number of working days reported was 222, against 21,388 men for an average of 242 days in 1907 and 20,555 men for 237 days in 1906. The average production per man each day was 2.73 tons in 1908, against 2.75 tons in 1907 and 2.60 tons in 1906. The average production of each man for the entire year was 605 short tons, against 666 tons in 1907 and 637.7 tons in 1906.

The number of mining machines in operation in 1908 was 197, the same as in the preceding year. The quantity of coal undercut by machine increased from 1,762,948 short tons in 1907 to 1,793,516 tons in 1908. The percentage of machine-mined coal to the total production increased from 12.37 in 1907 to 15.37 in 1908. Of the 197 machines in use, 142 were of the pick or puncher type, 51 were chain machines, and 4 were longwall machines.

Most of the coal mines of Alabama are operated on the basis of a ten-hour day, 100 mines, employing a total of 11,609 men, having reported ten hours as the length of the working day in 1908; 34 mines, employing 2,358 men, worked nine hours a day, and 16 mines, employing 1,205 men, worked eight hours.

About one-fourth of the coal produced in Alabama in 1908 was washed at the mines, the washing operations resulting in the production of 2,614,954 short tons of cleaned coal and 287,861 tons of refuse.

In an attempt to strengthen the mine workers' organization in Alabama the president of the United Mine Workers of America on June 30, 1908, called a strike of all the union mine workers in the State, to take effect July 6. This strike lacked the sympathy of the general public and on August 31 was officially called off. There were 83 mines where the men quit work. The total number of men on strike during

the year was 8,397. The average number of days each was idle was 44, and the total number of days' work lost was 373,513, or about 9 per cent of the total time made during the year.

According to Ed Flynn, the chief state mine inspector, the total death rate per thousand men employed in 1908 was 5.6, against 7.2 in 1907 and 4.67 in 1906. The number of tons mined for each life lost was 107,450, against 92,535 in 1907 and 136,541 in 1906.

So far as known the earliest record of the existence of coal in Alabama was made in 1834. The first statement of production in the State is contained in the United States Census report for 1840, the production for that year being given as 946 tons. In 1880 the production had increased to 323,972 short tons, but the development of the present great industry really began in 1881 and 1882, when attention was directed to the large iron deposits near the city of Birmingham. By 1885 the coal production of the State had increased to nearly 2,500,000 tons. Then followed a period of relapse and liquidation, which lasted for two years, after which business settled down to a conservative and rational basis and has since developed steadily. In 1902 the coal production of the State reached a total of over 10,000,000 tons, and in 1907 it attained the maximum of 14,250,454 tons.

M. R. Campbell, of the United States Geological Survey, estimates that the original coal supply of Alabama when mining began was 68,903,000,000 short tons. The amount of coal mined from this total supply up to the close of 1908 was 176,338,903 tons, representing an exhaustion, including waste in mining, of 264,000,000 tons, or nearly 0.4 per cent of the total. The production in 1908 was more than 6 per cent of the total production up to the close of the year, or a little less than 0.02 per cent of the estimated original supply.

ANTHRACITE COAL'S BIGGEST SIX MONTHS.

Reports and estimates made to the state mine inspectors indicate that the total tonnage of anthracite coal for the first half of 1909, ending June 30, has eclipsed all records, amounting to 35,250,000 tons. This would be at the rate of 70,500,000 tons for the full year, if the present rate is continued for the next six months. Last year's total was only 64,655,000 tons. The highest tonnage ever sent to market was in 1907, when 67,109,393 tons were mined. Equally gratifying is the fact that the fatality list in the past six months only numbers 103, about one-third less than usual in brisk mining periods. This exemption from the usual heavy toll on human life is largely the result of the scientific theory of mining being taught in lectures to employees by the Philadelphia & Reading Coal and Iron Company and other coal corporations.

PLANT TO BE ENLARGED.

Improvements which will cost more than \$100,000 are about to be made at the plant of the Pittsburgh and Buffalo Company at Johnetta, near Kittanning, Pa. The demand for coal has become so great that with the present facilities the plant is unable to handle the output. The coal tippie will be practically rebuilt and a rotary slate picker will be installed. Twenty-five new houses are planned to take care of additional miners, who will increase the force to 1,000 men.

MINERS RETURN TO WORK.

The strike among the miners of the Federal Coal Company at Gray's Flats, W. Va., was broken yesterday, when 152 men went back to work under the original scale offered by the company. About 100 men still remain out.

THE PROMOTION OF THE COAL INDUSTRY

National President Thomas L. Lewis of the United Mine Workers Considers the Ultimate Possibilities, the Obstacles to Overcome—Coal the Vehicle of Progress, the Tie That Binds the Nations Together.

Address Before the Annual Powwow of Order Kokoal at St. Louis, July 9, 1909.

Friends and Fellow Citizens:—I have learned since I came among you that you hear so many good things this morning that I scarcely know myself what to talk about.

Those men who know me best, understand that I could not be humorous if I wanted to be. If I had the ability of my friend Mr. Moorshead to be humorous and the ability of my friend Colonel Rend to be eloquent, I know that I could entertain you for at least an hour.

However, I shall take up a few moments of your time in discussing some questions that may be of interest to you, and I know ought to be of interest to every person in the United States.

It is an honor to have the privilege of addressing a convention of this character. You have come here, no doubt, to cultivate a social relation, to establish a more friendly feeling between those who are directly and indirectly interested in the coal business. And along with that I assume that you came here to get acquainted, not alone for the mere friendship that is in it, but in order that you can devise some plan, devise some way, in which you can promote the industry with which you are all so closely identified. If you have not come here to do that in addition with taking in all the social features that you can enjoying the hospitality of the local people, then in my judgment you will not have completed your work in this convention.

Many Interested in the Business.

We have here several classes of people directly interested in the coal business. We have the operators, men upon whom depends the responsibility of developing and operating the coal mines of the country. He has his capital invested. I desire to say that in my judgment he has more risk to run than the men engaged in any other kind of industry in this country—so far as his investment is concerned and his opportunity to earn profits on his investment. We have here with us the salesmen, as I understand, the man whose work it is to go out and sell the product of the mines, place it in such places where it will bring a return, not only to the man who operates the mine, not only to the men who are engaged in the coal business, but bring such a return as will give to the men who produce coal such wages as Americans ought to have to enjoy all of the privileges of this splendid, this great country, in which we live.

He has in his work many obstacles to overcome. First, he is looked upon as a man who represents a cheap industry—and we will talk more about that later. It is very plain that he represents in the eyes of the American people a cheap industry. He is not given that consideration that salesmen in any other lines are given by those who are compelled to buy the things which they need.

We have in addition to that the jobber, the man who buys coal in great quantities. They have to supply certain kind of trade and they have their money invested; they have their risks to run; they have their duty to perform in order to make their investment a paying proposition. Like the salesmen, they have their troubles: like the operator, they have at times reason to complain of the treatment they receive.

We have the retailer, the man who devotes his time and

his energy, the man who does everything to satisfy the domestic coal consumer.

There Is the Retailer.

The retailer in the coal business is peculiarly situated. He is the man who comes in direct contact with the mass of the people, the men who are domestic users of coal. He has to have his yards. He must have his terms. He is required to have his men; and he has to have the teams taken care of, not two or three months in the year, but they must be taken care of 365 days every year, whether he uses them or not. He must keep his men employed, the most of the time at least, because if he does not, when he needs them the worst the chances are that he would not have them. Not only that, the retailer is peculiarly situated because his business depends largely on weather conditions. If the weather is mild in the winter, he has made his trade, he has bought his fuel, but he can not sell his coal because people won't buy it. If there is a sudden change in the weather, however, and it is necessary for him to fill every coal bin quickly and promptly, if he doesn't do it he is the most abused man in the community, because he can't supply coal to everybody at the same time. And if, under those circumstances, during a large number of months he has not been able to make a profit, in fact, has been losing money in his business, what then? He discovers a chance to boost the price of coal up a little, because the coal consumers have not been filling their coal houses or their coal bins. The very minute he raises the price of retail coal, what happens? Why, he is charged with going into a conspiracy in restraint of trade, and he has confronting him not only all the intricacies of the law as interpreted by prosecutors and judges, but he has got hanging over him the fear of being haled into court, being tried for conspiracy, and being sent to jail, simply because he dare ask for a reasonable or probably sometimes a little higher price than he should have asked, in the minds of the public, in order that he might get a reasonable profit on his investment. Those are questions we should understand more about. We should not understand these questions alone. The work of this splendid society, organized to lift men from a lower level to a higher, and boost along the coal business of the country, you will never complete your work until you begin to educate the American public that they must respect you whether they like you or not. If we do this we will have accomplished part of our work, and until we do we will not have accomplished that for which I believe we are organized.

The Men at the Mines.

We have the men at the mines, the men who produce the coal, the men whose surroundings are such that the occupation of a miner is more dangerous than the occupation of any other class of laboring men in this country, with the single exception of those employed in making explosives. We know the miner is not constantly employed, because of the uncertainty of the coal business. We know that the miner wants a high standard of wages, because he believes in keeping with American ideas of having a high standard of everything. We believe that the men who produce the coal are entitled to more consideration than they receive

at the hands of the American people and men in public office.

What is the remedy? First, we must realize the coal industry is looked upon as a cheap industry. Let us analyze the question and see whether or not it is the case. I contend that coal has been the medium that has made the United States the foremost industrial and commercial nation on the face of the globe.

I contend that coal has been the medium that brings the nations of the world closer together than anything else. Why, by reason of the use of fuel alone we can go to Europe and land back on the American shore in two weeks. If you had to depend on the old system of the elements and the wind to take you over and bring you back the chances are you would not make that trip in six months.

Coal an Educational Force.

Not alone that, coal has been the medium that is bringing the nations of the world into close communication with each other. As a natural result, it is one of the mediums, one of the factors, that is pushing out the great force of civilization and education. Some men probably will not agree with me with regard to this statement. But we are willing always to discuss our statements with anybody at any time, in any place, when we have the opportunity. But the coal business, regardless of that fact, is cheap, cheap, cheap. So much so, that there are lots of mine owners in this country today that are on the verge of bankruptcy. Not because of bad management, not because of poor management, not because of the inability of the men who own and operate the mines to do it properly, but because of a system that has been engrafted in the minds of the American people that mine owners should mine coal for nothing in order to have the privilege of giving it away. And if the miner owners must mine it for nothing, then the mine workers must dig it for nothing, and that would make a sorry spectacle as a part of this great country of ours if we were driven down to the point of starvation in producing this very, very valuable commodity called coal.

We all understand that coal moves every wheel of industry in this country. Coal has made it possible to bring men here from every part of the United States on the very shortest possible notice, and it will take you to your home again just as quickly. Imagine, in contrast, that the men here who are operating coal mines at my home in eastern Ohio had to travel from here to Ohio down the old stage coach line along the old National pike. Where would we get to? I imagine these annual pow-wows would not only be discontinued, but they never would materialize. But they have materialized, because the commodity you represent is being used in every branch of industry, not only turning the wheels of industry, not only making our nation greater and more and more prosperous, but it is used to generate heat to bring comfort and happiness to the homes of all.

Where Kokoal is Helping.

Why should it be looked upon as a cheap industry? There is only one explanation. That is, those engaged in the industry have spent too much time keeping apart, failing to get acquainted with each other, and too little time in trying to get acquainted with each other in order to boost along the business. I know that with the organizations that have been established all over the country, not only this splendid order of Kokoal, but with all the retail and wholesale organizations being established in different states, they ought to be encouraged to go on and make the organization stronger and better and more powerful.

We ought to be able with the force we have, representing seven hundred thousand mine workers, with the thousands of men engaged in all branches of this industry, to say in Washington, "We are not going to interfere with other

people looking after their own business, but we do not propose to allow you people, without a strong and vigorous protest on our part, to any longer restrict our rights and keep us down in a low, cheap level where we are not respected, even among each other, and not respected by public men of this country."

We can change this if we want to change it. It is up to us to try. How are we going to do it? Several things enter into this element of cheapness, and one of them is that the transportation lines of this country are buying their coal too cheap. Some men will say that is a broad statement to make, and that Lewis had better look out or he will be getting into the same position as many other men, knocking the railroads. I am not a knocker. I am a booster at all times because I am knocking it. But whenever I see anything in any line of business that I know anything about that is wrong I am going to point it out; and today railroad companies—and I respect them for the splendid work they have done in developing this country. Without railroads I imagine all our population, or the most of it, would be east of the Mississippi River. Railroads blazed the way for the development of this country of ours.

Coal is Sold Too Cheap.

And when I say that railroads are buying coal at a price that is less per ton than it costs to produce that coal, I know what I am talking about. When a railroad company can buy coal f. o. b. mine, run-of-mine coal for seventy to eighty cents a ton, why, there is only one result. Either the men who are mining the coal must mine it for nothing, or the operators who own the mines must go out of business, because they cannot remain in it and produce coal at that figure and pay the salesmen on the road, pay the men who handle the coal, pay the retailers reasonable profit for their time and for their energy and for their efforts in those different lines. If the railroads are buying coal too cheap, who is responsible? You know who is responsible in my opinion. The politician partly, the retail dealer partly, the jobber party, the operator partly, and the miners must assume their share of the responsibility. If we were able to go into some states in this country and organize the men that mine coal, do you know what we would do? We would demand such a rate of wages that we would compel the mine owners to sell their product so that they could make a profit, or we would go after the men who were in the business and help put them out if we could. That may sound like strong language, but I have been taught since I was a boy that self-preservation is the first law of nature. And it is only a question of how we can do those things. Not only do the railroads get their coal too cheap, but the manufacturers of this country get their coal too cheap. Let us see how cheap coal for the steam trade indirectly affects the politician. Whenever the mine owner must sell his coal to the steam trade at a figure in which there is no margin of profit what is the result? Why, he must sell it to somebody at a higher rate in order that he may not go into bankruptcy.

The Small Consumer Pays the Bill.

What is the sequel? If he is not able to get a higher rate from the steam trade then the domestic consumer must pay the bills in order that the miner owner can earn a profit and that the dealers can secure a fair profit in their business. What is the natural result? The result is that in retailing coal the domestic consumer must pay a higher price than he would be required to pay if the steam trade paid the price that they ought to pay for fuel. Then what? Following that out there is a general cry or protest from the domestic consumers against the price that they must pay for coal. And politicians, who, of course, travel under the name of public servants, always working for the public good

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THE BUSY CHICAGO COAL DEALERS

Hold an Interesting and Profitable Meeting on Tuesday, Forward a Brief to the Car Demurrage Committee of the Interstate Commerce Commission and Have a Day of Recreation at Riverview Park near Aurora on Saturday.

The meeting of the Chicago Coal Dealers' Association last Tuesday was one of the most interesting yet held. The discussion was too interesting to be treated briefly, yet was of especial interest and importance to those members who were present and heard all that was said. Those who do not come to the meetings are the losers, for those who do come never fail to go away pleased with having gone.

Mr. Jones spoke again of the importance of knowing just how profitable or otherwise the coal business was, and urged the adoption of a cost system that would show every dealer just where he stood at the end of every month. To illustrate how little many dealers knew about the actual results of their business he asked how many present really knew whether they had made money or lost money during the past month. Only five responded. He urged the use of some system of records that would help the dealer and raise the business standard at the same time. He also urged the better acquaintance of members of the coal trade and spoke of the better feeling that obtained by frequent mingling of coal merchants. He said that a club on the West Side held meetings for social purposes and the better acquaintance had helped the business and the men engaged in it.

Mr. Kelly, a visitor who has been in the coal business in Chicago the past 38 years, spoke interestingly and entertainingly.

Mr. Gilmore spoke of the evils of price cutting and the necessity of finding a remedy.

Mr. Mueller referred to the fact that the bakers of the city had met and decided on a raise in the price of buns, doughnuts, etc., and asked why the bakers enjoyed rights denied the coal men.

Mr. Robinson said that if the coal men had met and raised the price of coal the first people to holler would have been these same bakers.

Collections of \$892.41 since last report were made by the collection department.

Mr. Sallman reported that he had prepared and forwarded the following brief to Chairman Franklin Lane of the sub-committee on car demurrage of the interstate commerce commission. He said Mr. Moderwell was also on the committee to prepare the brief, but had been out of the city, and as he did not want to bind Mr. Moderwell by his views, he presented it as his own report:

THE BRIEF ON DEMURRAGE.

In taking advantage of the opportunity presented to this Association of filing our objections to any uniform set of demurrage rules, we respectfully submit the following:

1—We consider a uniform set of rules to apply over the entire country as impossible and impracticable on account of local conditions.

2—We do not believe in constructive notice on carload coal.

3—Carload coal placed on private sidings should be given the same privileges as those placed on public team tracks. Under the present rules, there is a discrimination of 24 hours in favor of cars placed on public team tracks in the matter of notice. For example, on cars placed on public team tracks, the free time begins at the first 7 a. m. after proper notice; whereas, on cars placed on private tracks, the free time begins at the first 7 a. m. after placing.

4—Cars containing in excess of 66,000 lbs. should be allowed 72 hours for unloading.

5—Cars containing frozen coal should be allowed a further privilege of 24 hours.

6—The present method of figuring bunching at Chicago is very unfair. Cars from the same point of shipment to the same destination should be placed in the order of shipment regardless of the ability of consignee to unload. Separate periods of free time should be allowed on each car, and the shipment of each car should be treated individually.

7—Without doubt, there are two kinds of demurrage, fair and unfair. Fair demurrage is where the car has been delayed unreasonably by the consigner or receiver through no fault of the carrier. Unfair demurrage is where the delay in unloading or reconsigning is caused directly by the delay in transportation or delivery by the carrier. A large percentage of the demurrage charged in Chicago is caused directly by poor transportation and switching service.

Before your Committee took this matter in hand, the advisability of opening up a shippers and receivers' demurrage bureau, in charge of a competent manager, to combat unfair decisions of the Railroad Bureau manager, was under consideration. We are hoping that your Committee will, in addition to modifying and amending the present rules and conditions, adopt an optional average plan similar to the set of rules now in force in the State of Michigan, which are a result of water competition. The average plan being a direct reply to the railroads' contention that "it is the car we want and not the dollar," so that when we give them the car they should be willing to give us credit for the unexpired free time.

Conditions in Chicago with reference to water competition, especially on Eastern coal, are the same as at Detroit, Michigan, as Eastern coal can be and is being laid down in Chicago for much less than the rates by rail, therefore we consider that the present time of four days on Eastern coal and three days on Western coal allowed for reconsignment is only fair, and we hope it will remain unchanged, as any decrease in the present free time for reconsignment will discourage shipment by boat to the extent of materially injuring the market for Western coal in Chicago.

This Association had two special delegates in attendance at the proceedings before your Committee at Washington, June 4th and 5th, as we consider the matter of demurrage of vital interest to the coal trade of Chicago, and it is the hope of this Association that any action taken by your Committee will forever remove the possibility of a continuance of the unfair tactics employed by the Chicago Demurrage Bureau by one-sided interpretation and enforcement of the present rules.

(Commissioner Hallock has since received from Secretary Allen P. Matthew an acknowledgment that the paper was received and would be presented to the Committee.)

THE PICNIC.

The picnic of the coal dealers Saturday was most successful in every way, three trains being required to convey the picnickers to the beautiful park near Aurora. The amusements of the day were varied, the interest being centered in the sports and games and guessing contests, which

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IOWA COAL MINERS SAFE, SHOWN BY INSPECTION

According to statistics given out by the State Mine Inspectors of Iowa the coal mines of that state are in better condition than they have ever been before. Only twenty-nine miners met death in mine accidents in Iowa during the twelve months ending June 30 as against thirty-eight during the previous year. Distributing this number of fatalities among the 17,000 miners employed in the state the average death rate is found to be 1.75 per thousand. In view of the fact that the average of the entire country has been 4 per thousand during the last six years, this showing is considered remarkable.

In 1903 and 1905 the average was a trifle less than for the past year, but not nearly so many miners were employed. The record of the past year would have eclipsed all others had it not been for seven deaths—five in the Third district, which includes Polk county, and two in the Second district—which were due to falls of slate. The warm weather is to a large degree responsible for the falling of slate, according to the inspectors.

Ed Sweeney of Des Moines, Rhys T. Rhys of Ottumwa and John Verner of Chariton, who constitute the board, affirm that Iowa compares well with any state in the country in point of safe, sanitary mines. The mines in this state are constantly changing owing to natural causes, and this adds a handicap to the safety of the miners. Additional care has to be exercised to offset this difficulty.

Approximately 7,000,000 tons of coal were mined during the past year in Iowa, and the new mines opened give every indication of being among the best in operation.

The board members speak highly of the majority of coal operators, stating that they do everything in their power to co-operate with the state officials in running the coal industry in the best manner possible.

Mr. Berner expressed himself as in favor of having a set of rules arranged for licensed mine foremen to hold them responsible for any mismanagement. This plan has been successfully tried with the hoisting engineers.

THE WASTE OF COAL, OIL AND GAS.

The report of the National Conservation Commission of 1908, showing the reckless manner in which our natural resources are being wasted, finds an echo in a bulletin (No. 394) just issued by the United States Geological Survey, in which are reprinted the papers on mineral resources contributed by members of that Survey to the conservation report. The data on which these papers are based were not obtained especially for the occasion, but were taken from the files of the Survey, where they had been accumulating for years. Taken together they present a state of affairs that may well awaken reflection.

Coal is considered first, and it is shown that waste in mining loses forever about one-half as much as is marketed. This half is either left in the ground in thin beds or in the shape of pillars to support the roof. Coal has been extensively mined in the United States for not much more than half a century, but the consumption is increasing so enormously that if this increase should continue all the easily accessible coal would be exhausted by the year 2040 and all coal by the middle of the twenty-first century. It will, of course, not continue at such a rate, for the increasing scarcity will raise prices and check consumption. Water power, too, will undoubtedly largely take its place.

With regard to petroleum the situation is a good deal more serious. Petroleum has been used for less than fifty

years, and it is estimated that the supply will last only about twenty-five or thirty years longer. If production is curtailed and waste stopped it may last till the end of the century. The most important effects of its disappearance will be in the lack of lubricants and in the loss of illuminants. Animal and vegetable oils will not begin to supply its place. This being the case, the reckless exploitation of oil fields and the consumption of oil for fuel should be checked.

In natural gas the waste is enormous; 1,000,000,000 cubic feet are estimated to be wasted into the air every twenty-four hours. The gas supply will last about twenty-five years—about as long as it has already been utilized.

RAILROAD COMMISSION WITHOUT JUDICIAL POWERS.

In a decision rendered by Judge E. B. Kinkead of the common pleas court of Columbus, O., in the injunction suit of the Black Diamond Coal and Coke Company against the railroad commission and the Marietta, Columbus and Cleveland Railroad Company on the grounds that the commission and railroad company were discriminating against them in the distribution of coal cars, he declares the commission has no right to act in a judicial capacity or make arbitrary rules governing the action of the railroad companies.

He further claims that to allow the railroad commission to do so would be to usurp the rights of the courts. "The railroad commission has no power—any more than a court of equity—to make an order to the railroad company to furnish cars to a mine according to its capacity," the decision reads; "It is unreasonable and unjust and is not designed to provide for immediate requirements of shippers, but is calculated to foster, rather than prevent, discrimination."

NEW TYPE OF COLLIER.

The new fleet collier for which bids are to be opened next month at the Navy Department will be the latest model of that type of auxiliary naval vessel. The dimensions are: Length 520 feet, beam 65 feet, draft 27 feet, pinches and displacement 19,360 tons. The collier will carry 12,500 tons of coal as well as 1,000 tons of oil. The latter will be used as fuel for the fifteen torpedo boat destroyers which are nearing completion or are under construction. The speed of the collier will be fourteen knots.

It is not intended to place any armament on the collier beyond, perhaps, a few rapid-firing guns to repel torpedo attack. It is realized that the colliers will have to proceed, when in the neighborhood of an enemy, under the convoy of other ships, but they are more likely to meet the fleet at places which are remote from attack, although constant vigilance will have to be maintained against torpedo boat surprise. It has not been decided whether to install a device for coaling at sea.

GOOD COKE MADE FROM KENTUCKY COAL.

Kentucky has an opportunity to become one of the great coke-producing states in the Union if the coke coal which this state produces is used, according to the annual report made to Governor Willson by C. J. Norwood, state inspector of mines. Prof. Norwood says that the coal along the Big Sandy Valley makes ideal coke, and that but little of it is used for that purpose.

COAL STRUCK AT COUNCIL BLUFFS, IA.

In digging a well in Fairmount Park at Council Bluffs, Iowa, at a depth of 137 feet, the drill struck coal and the vein developed about a foot in thickness. At a depth of 140 feet, another vein was struck, this time about two feet in thickness.

NEW COAL TRADE ENTERPRISES

Saginaw Ice and Coal Co., Lansing, Mich.

Lincoln Supply Co., Chicago, Ill., capital \$20,000.

Emaus Gas & Fuel Co., Emaus, Pa., capital \$5,000.

Carnwath Coal Co., Clearfield Co., Pa., capital \$5,000.

Fairmont & Lincoln Coal & Coke Co., Kingmont, W. Va.

Galatia Coal Co., Galatia, Ill., capital increased from \$32,000 to \$76,000.

Mackton Coal Co., Big Sandy, Mont.; capital increased from \$70,000 to \$200,000.

Jefferson Coal Co., Paintsville, O., capital increased from \$150,000 to \$500,000.

Jackson Coal and Coke Co., Petersburg, Pa.; capital increased from \$25,000 to \$50,000.

Great Northern Fuel Co., Kansas City, Mo.; capital decreased from \$1,100,000 to \$300,000.

Gates Coal and Coke Co., Pittsburg, Pa.; capital, \$10,000. H. K. Seibereck and others.

Carroll Coal Co., Racine, Wis., capital \$60,000. Incorporators Fred C. Best, Charles H. Lee, George Caystile.

Henry Frank Co., Middletown, O., capital \$5,000. Incorporators Henry Frank, L. J. Frank, E. K. Pennebaker.

Columbia Washed Coal Co., Chicago, Ill., capital \$2,500. Incorporators E. P. Glennan, D. H. Smith, T. J. Smith.

The Athens & Pomeroy Coal and Land Co., Athens, O., capital \$50,000. Incorporators John H. Martin and others.

Read-McGill Co., Louisville, Ky., capital \$20,000. Incorporators E. D. Read, Joseph H. McGill, James A. McGill.

People's Fuel & Coke Co., Galesburg, Ill., capital \$6,000. Incorporators Geo. R. Sandberg, L. M. Tapper, E. H. Blaich.

Crocker Coal Co., Des Moines, Ia., capital \$10,000. Incorporators J. A. McKinney, D. J. Van Liew, Addison Parker.

Grays River Coal Co., Portland Ore., capital \$150,000. Incorporators Jennie C. Natterstad, P. L. Palmer, H. A. Reynolds.

The Brownsville Coke Co., Uniontown, Pa. Incorporators I. W. Seamons, Harrold W. Seamons and James W. Abraham.

Success Fuel Burner Co., Chicago, Ill., capital \$10,000. Incorporators Charles D. Wright, Adolph Kaestner, J. Alen Mackenzie.

Staples-Hildebrand Supply Co., South Bend, Ind.; capital, \$40,000. Incorporators—G. D. Staples, D. C. Hemley, W. M. Hildebrand.

Nutmeg Co-operative Co., Portland, Me.; capital, \$300,000. President, C. R. Eaton; treasurer, T. L. Croteau; clerk, J. E. Manter.

Star Hill Coal Mining Co., Belleville, Ill.; capital, \$2,500. Incorporators—W. C. Boatman, A. Totten, H. Nevenner, Fred Wieman.

City Fuel Co., Ft. Wayne, O.; capital, \$20,000. Incorporators—G. H. Krudool, H. C. Moderwell, J. E. Clifford, E. H. Rolf, E. H. Old.

Beaver Creek Coal Co., Dallas Co., Ia.; capital, \$100,000. Incorporators—E. C. Smith, J. W. Lowe, Wm. Berry, W. E. Smith, W. S. Stuart.

Colonial Coal & Coke Co., Philadelphia, Pa., capital \$100,000. Incorporators Ralph Lupton, William M. Lupton, Harry A. Pierce.

Black Mountain Corporation, Alexandria, Va., capital \$7,500,000. Officers Charles M. Warner, president; Charles H. Zehnder, treasurer.

H. W. Pollock & Co., Manning, Ia., capital \$25,000. Incorporators H. W. Pollock, R. G. Sutherland, J. M. Albers, H. L. Fitch, S. Mayberry.

Wynn Coal Co., Campbell Co., Tenn., capital \$10,000. Incorporators Harry Wynn, J. H. Tinsley, James H. Wynn, A. J. Jones, George H. Wynn.

United Coal Co., Mobile, Ala., capital \$2,000. S. Zimmern, president; Jacob Zimmern, vice-president; Lee J. Zimmern, secretary-treasurer.

Delaware, Lackawanna & Western Coal Co., Trenton, N. J.; capital, \$6,800,000. Incorporators—E. W. Lewis, Wm. Fahnestock, Percy R. Pyne.

Oklahoma Fuel & Manufacturing Co., Oklahoma City, Okla., capital \$250,000. Incorporators Charles H. White, K. C. Ray, Charles Eckers, W. O. Bentley.

Winnifrede White Ash Co., Williamson, W. Va.; capital, \$100,000. Incorporators—J. A. Sheppard, W. Goodykoontz, H. Scherr, R. L. Wall, V. X. Stauffer.

Kanawha and Ohio River Harbor Co., Columbus, O. Gottlieb Hartweg, president; Edwin Marmet, vice-president; J. T. Hatfield, secretary and treasurer.

The Keokee Consolidated Coke Co., Delaware, capital \$3,500,000. Incorporators C. P. Perin and R. B. Moffet, New York city; F. M. Shrive, Wilmington, Del.

Birmingham Fuel Co., Townly, Ala., capital \$50,000. James Gallagher, president and general manager; H. F. Day, secretary-treasurer; both of Birmingham, Ala.

The Bafour Coal Mining Co., Fargo, N. D., capital \$100,000. Incorporators A. B. Melhouse, D. W. Moore of Balfour, N. D., and James Anderson, Stewartsville, Minn.

Consolidated West Virginia-Ohio Coal Co., Dover, Del., capital \$300,000. Incorporators E. Dale Field, Joseph H. Field, Uniontown, Pa., and Charles E. Wilson of Dunbar, Pa.

DeKalb Fuel, Light & Power Co., Ft. Wayne, Ind.; capital increased from \$100,000 to \$400,000 and name changed to Indiana Fuel Light Co., Chas. H. Prinz, secretary.

Hitchman-Glendale Consolidated Coal Co., Wheeling, W. Va.; capital, \$2,000,000. Incorporators—E. T. Hitchman, W. H. Koch, L. E. Sands, H. Hazlett, Geo. R. E. Gilchrist, E. A. Upstill.

William C. Atwater & Co., New York, capital \$100,000. Incorporators William C. Atwater, Westhampton Beach, N. Y.; Charles P. Hutchins, Wellaston, Mass.; John L. Steinbugler, Brooklyn, N. Y.

The American Steel & Fuel Co., Altlake, O., capital \$10,000,000. Officers B. T. Bauer, president; A. A. Sweet, first vice-president; J. M. Moore, second vice-president; G. S. Payne, secretary; H. P. Clark, treasurer.

The Pocahontas Smokeless Coal Co., Welch, W. Va., capital \$50,000. Incorporators W. E. Deegans, Glen Jean, P. E. Gallagher, St. Albans; O. C. Huffman, Welch; J. G. Vaughn, Charleston; John B. Hofmeier, Parkersburg.

PERSONAL

George Gregory of Marshalltown, Ia., formerly president of the Iowa and Nebraska Retail Coal Dealers' Association, which was recently consolidated with the Northwestern Retail Coal Dealers' Association, has been elected president of the latter association at a meeting of the directors of that association held at Minneapolis. The other officers chosen were C. A. Cruikshank, Hannibal, Mo., vice president; H. Pretzer, Aberdeen, S. D., and H. T. Folsom, Lincoln, Neb., directors. G. H. Reeves was again secretary and treasurer. H. L. Laird of Marshalltown, Iowa, who has been secretary of the merged association, will be connected with the Northwestern association in charge of Iowa territory as well as parts of Kansas, Missouri and Nebraska.

Smith, Lineaweaver Co., miners and shippers of anthracite, bituminous, gas coal and coke, West End Trust Building, Philadelphia, announce the appointment of Charles E. Lester as manager of their bituminous coal sales, effective July 15th. Mr. Lister, as will be remembered, was the choice of Order Kokoal for Imperial Pictor at the St. Louis Pow-wow, and had previously served a term as Imperial Modoc. He has been, for a young man, an unusually prominent factor in the eastern coal trade, and goes from New York to Philadelphia with the certainty that he will yet attain an even more commanding position. Not only is Order Kokoal proud of him; the coal trade recognizes his sterling merit wherever he is known.

By the springing of the safety clutches on an elevator in the State Life building in Indianapolis two people were injured and a number of others badly shocked a few days ago. One of the two injured was William Scaife, editor of the United Mine Workers' Journal, whose back was badly strained so that he is still suffering from the shock. Fortunately the accident occurred near the main floor, where the elevator stopped with a sharp jerk, and then went sliding, in spite of the clutches, a foot below the main floor. While Mr. Scaife was able to go to his hotel, he was suffering severe pain for several days, and is not yet recovered from the effects of the jar.

Lewis M. Overholt, general manager of the Decatur Coal company, has resigned that position and was succeeded by W. C. Armstrong, a former manager of the company. Mr. Armstrong is one of the largest stockholders in the company, and has been out of active life, taking a rest for over a year past. Mr. Overholt is now located in Chicago.

The Winifred Consolidated Coal Co. of Goodman, Mingo Co., W. Va., has been reorganized with M. L. Sternberger of Jackson, O., as president. O. B. Gould of Wellston, formerly warden of the Ohio State Penitentiary and Republican leader in the Tenth Congressional District of Ohio, will have the active management.

At the annual meeting of the stockholders of the Sunday Creek Co., held in Jersey City, no changes were made in the board of directors. The directory still comprises: S. P. Bush, E. A. Cole, W. K. Field, W. O. Henderson, W. F. Hoffman, C. L. Poston and John R. Turner.

D. P. Bogle, for some years connected with the Smith-Lehr Coal Company, has bought of Centralia capitalists a half interest in the Pana Ice and Cold Storage Company, and will give his time to that company.

The New York office of the Mead-Morrison Mfg. Co.

has been removed from 11 Broadway to the 21st floor of the Singer Building, 149 Broadway. Their telephones are 565 and 566 Cortlandt.

Hartshorn Bros., the well known operators of the Electric mine just west of Danville, have purchased the Davis mine at Muncie, Ill.

W. S. Miller has sold his coal business at Oxford, O., to Harry J. Craig.

ALASKA'S VAST FUEL RESOURCES ARE UNDEVELOPED

The coal production of Alaska for 1908, as reported to the United States Geological Survey, was 3,107 tons, with a value of \$14,810, as compared with 10,139 tons in 1907, valued at \$53,000. Four mines were operated in 1907, but only three were productive in 1908. Of these, one was at Port Graham, Kenai Peninsula (lignite); one at Chignik, Alaska Peninsula (bituminous); and one at Chicago Creek, Seward Peninsula (lignite). In addition a few tons of coal were mined for domestic use at various places, all used locally.

Even where a coal field has been both developed and surveyed in detail there is a very large amount of uncertainty in all tonnage estimates. Moreover, the Bering and Matanuska fields, which contain the most valuable coals of the territory, are regions of great structural complexity, which introduces another factor of error. In Alaska only between 300 and 400 square miles of coal-bearing rocks have been surveyed in detail. It is estimated that the unsurveyed coal fields cover 12,000 square miles, but of these fields only the general outline is known. It is also a well known fact that more than a third of Alaska is almost unexplored.

The present low status of coal mining in Alaska is no criterion of the future importance of this industry. Up to the present time coal has been mined only for very local markets, and the high grade fuels of the Bering river and Matanuska fields are practically untouched. These two fields can ship coal only when railway connection with tide water has been established. Some progress was made on such railways during 1908, but it will probably be two years before any considerable shipments are made. In both these fields the activities in 1908 were largely confined to surveys for patents, assessment work, and trail and road building. Up to the close of 1908 no patents for coal lands had been issued, and this tended to discourage development.

Coal consumption in Alaska also decreased in 1908 as compared with 1907 owing largely to the decreased industrial activities brought about by the financial depression, but in part to the increasing use of petroleum as fuel. The shipments of petroleum to Alaska in the year ending June 30, 1907, amounted to 117,606 barrels; in the succeeding twelve months they increased to 285,642 barrels.

COAL FOUND IN MEXICO.

It is now reported that coal has been found in paying quantities near Mier, Tamaulipas, on the Rio Grande river. A little over a year ago coal was first discovered in this vicinity, but not in sufficient quantity to warrant its development. If the later report is true, it will be a great boon to this community on both sides of the river, as the supply of wood fuel is running short. Practically all of the irrigation enterprises in the valley require considerable fuel, and where to obtain it is becoming a serious question.

DEMURRAGE AND DEMURRAGE RULES

An Address Delivered Before the Illinois and Wisconsin Retail Coal Dealers' Association, in Chicago, June 29, 1909,
by E. L. EWING, of Peoria, Ill.

To be able to entertain or express any original views or arguments on the subject of demurrage one must either be a large contributor towards the support of a demurrage bureau or be the manager of one. I have in mind the managers of several such bureaus whose views are certainly original because they are very seldom shared by those upon whom they are imposed and whose arguments are not only original but generally effective to the extent of one dollar a day and of holding their jobs. Within the past few years we have witnessed the downfall of many prominent men but the managers of the demurrage bureaus serenely hold their jobs and get their salaries raised as the cost of living increases.

No item of transportation charge is of equal interest to every receiver or shipper of freight in carload quantities and no other charge, imposed by the railroads in connection with freight transportation, has resulted in as much controversy, litigation and legislation as has demurrage. Having its origin in the old maritime practice of imposing additional charges for the detention of a vessel beyond the time for which chartered, demurrage has been construed by courts and commissions to be a combined warehouse and trackage charge, legally applicable to the detention of cars beyond a reasonable time for loading or unloading. To the victim it often appeals as a penalty for failure to comply with some rule imposed by the carrier.

Since 1887 the carriers have jointly maintained bureaus or associations, formerly termed "Car Service," but recently designated as demurrage bureaus or association for the express and sole purpose of handling demurrage matters.

There Are Forty Demurrage Bureaus.

At present there are forty demurrage bureaus, the expense of maintaining same being pro rated among the member roads. Each bureau has its own set of rules and there are no two codes exactly similar. The Interstate Commerce Commission has assumed jurisdiction over demurrage on interstate shipments and the carriers are required to embody their demurrage rules and rates in their printed tariffs or to show, in each tariff, reference to separate issues containing the rates and rules; having so published tariffs the carriers must assess and collect demurrage as they would any other transportation charge and failure to do so would constitute a violation of the act to regulate commerce.

The various state railroad commissions have, in some instances, refused to assume any jurisdiction over demurrage because of specific authority by statute or otherwise; this has resulted in legislation intended to give the state commissions such authority, the railroads have opposed such legislation and little progress has been made in this direction. In several states, however, the railroad commissions have assumed authority even to the extent of prescribing demurrage rules with which the carriers have, in some instances, refused to comply. Various organizations of shippers have expended much time and money in the endeavor to establish demurrage upon a fair and reasonable basis, admitting the justice to the carrier of a reasonable charge for undue detention of cars but combatting many of the present rules as being arbitrary and unjust. The receivers and shippers who pay the most demurrage are also the ones who suffer the maximum inconvenience and dam-

age through inability of the carriers to provide sufficient equipment in times of car shortage. It is estimated that coal forms forty per cent of the tonnage of the railroads. It would be interesting to know what percentage of the total demurrage is collected on coal. At present the national demurrage committee, composed of one representative from each state railroad commission and one member of the Interstate Commerce Commission, are endeavoring to formulate a set of demurrage rules that may be applied on all business, state or interstate, superseding all present rules and at the public hearing in Washington, June 4 and 5, the subject was discussed at length.

It does not appear possible to construct a uniform set of demurrage rules that will be applicable to all localities and to all descriptions of traffic and be reasonable and just. Demurrage is not a transportation charge but is a charge for a service that is immediately prior or immediately subsequent to the transportation service; it either precedes or follows the actual service of the carrier. The carriers liability as a carrier terminates with delivery of the car and at the same point of time that shipment becomes subject to demurrage rules.

There is nothing that in any way contributes to the accruing of demurrage upon any shipment outside of local conditions surrounding the loading or the unloading of the car excepting delay in transit that cause bunching of cars at destination and that is readily provided for in bunch rules and allowances. Therefore demurrage is a local proposition and should be subject to rules adopted to meet local conditions which are without variation in every section of the country.

In several states the shippers have the privilege of entering into contracts with the railroads whereby they receive credit for unloading and releasing cars within the specified free time such credits to be recognized in offsetting demurrage that accrues on other cars within the same month. No credits are carried forward to the next month. This is called the average demurrage plan and possesses many advantages over straight demurrage.

The Average Demurrage Plan.

The average plan possesses none of the objectionable features of reciprocal demurrage and it may be successfully adapted to all commodities and conditions. It is absolutely fair and just to shipper and to carrier as it is advantageous to both.

Working under the average plan a receiver or shipper is enabled to take advantage of conditions favorable to the rapid handling of cars and thereby accumulate credits that may be applied on other cars that are handled within the same month but under less favorable conditions. He may inspire among his employees a spirit of co-operation that will result in their making every effort to pile up demurrage credits. In conversation with the traffic manager of one of our largest industries I was informed that that industry operated five plants under the average plan and seldom had any accrued demurrage in excess of their credits as their foreman and superintendents were as eager to accomplish the loading or unloading of cars sufficiently within the free time to obtain one or more days' credit on each, as if the credit represented a cash dividend in which they were to share.

If the average plan of demurrage was in general operation many of the present difficulties would not exist. There are several features of the plan as it now stands where in force, that are capable of improvement by minor changes that will greatly increase its efficiency and the carriers cannot consistently oppose the plan for several reasons.

The carriers have placed themselves on record as regarding the collection of demurrage in the light of a misfortune and have stated that each dollar demurrage collected represents a loss of over a dollar in earning capacity of the car in service. They have said that demurrage was intended to hasten the release of cars and not as a source of revenue. Therefore, it having been sufficiently and convincingly demonstrated that the average plan of demurrage, affording, as it does, a substantial inducement and reward for the prompt release of a car, accomplishes to a far greater degree just what the carriers claim straight demurrage is intended to accomplish, no consistent objection to the plan is apparent.

In many of the states carriers are required by law to furnish cars for loading under penalty of heavy damages for failure to do so when shippers have placed written orders for same. In such states, with the average plan of demurrage in force, recourse under the statute for failure to furnish cars when properly ordered and the benefit of the common law governing carriers in event of unreasonable delays in transit, little necessity of reciprocal demurrage remains. Under such conditions the shipper has every opportunity to so conduct his business as to have no demurrage troubles or losses.

The proposed uniform demurrage rules contain no provision for the average plan and shippers that have enjoyed same view with alarm the possibility of now reverting to the old plan. Average demurrage has only been obtained through great effort, where in force, and has proven a success. The complacency with which the carriers view the possible superseding of same would indicate that demurrage is a satisfactory source of revenue after all their statements to the contrary.

It is apparent that the exponents and supporters of the present demurrage rules have entirely departed from the real object of demurrage which is or was, the expedition of loading and unloading of cars that they might be placed in service again within the shortest possible time. The demurrage charge might be viewed, not as a penalty for failure to unload car within the appointed time but as affording an inducement to unload within that time and so avoid becoming subject to the charge and, gentlemen, that is the only way to combat demurrage: don't let it accrue.

But there are conditions under which it is impossible to comply with the rules and as I have just stated it would appear that the true principle of demurrage has been entirely lost sight of and that the present and proposed demurrage rules were framed up with but one object and that object to be the collection of one dollar per day for every day in excess of the first two days that car remains in the possession of the receiver or shipper, regardless of every fact or condition that may contribute to the delay in loading or unloading.

The Proposed Uniform Rules.

In the proposed new and uniform rules there is no allowance made for the varying conditions that surround the handling of the various commodities that are transported in carload quantities and yet if a shipper question or attacks the reasonableness of the freight rate upon any particular commodity and his complaint is heard before a commission or a court, one of the strongest arguments presented by the carrier in defense of the rate attacked is always the recitation of the extraordinary conditions that surround the trans-

portation of that particular commodity which necessitate a high rate of freight that the carrier may not suffer a loss of revenue. Is there any consistency, then, in prescribing demurrage rules that, like Uncle Sam's postage stamp, are to cover the entire country and that recognize no variance in commodities or the conditions under which same are handled?

I will cite a peculiar condition that formerly obtained at Peoria. In former years, large quantities of a low grade of hay were shipped to Peoria to be fed to cattle at the distilleries; in recent years cotton seed hulls were introduced and to a considerable extent, superseded the use of the hay. Cotton seed hulls may not be unloaded with the facility with which baled hay may be handled but in transportation charges they yield a greater revenue to the carrier notwithstanding which facts, for several years shipments of hay enjoyed twenty-four hours more free time than did cotton seed hulls.

Then we have cars of varying capacity. Is forty-eight hours' free time a reasonable allowance for the unloading of two 40-ton capacity coal cars? Admitting that it is, how about unloading two 55-ton capacity cars in 48 hours or handling thirty tons more coal in the same length of time? This process of reasoning may be carried on indefinitely. Certain commodities require the preparation of cars before they may be safely loaded or transported therein and the carriers do not so prepare the cars nor would they pay claims for loss or damage resulting from the cars not being so prepared if the shipper failed or refused to do so. Refrigerator cars, placed for the loading of perishable freight in the season of frost for example: every nut and bolt in the car will be white with frost showing the condition of the car. The car must be warmed and the frost driven out or the potatoes or other perishable commodity would be damaged before the loading of the car was completed.

In the summer season, refrigerator cars must be cooled, the temperature must be reduced before they are safe to load. Other cars require lining and blocking, stock cars must be cleaned and cars in which salt has been transported must be thoroughly cleaned before loading other commodities; cars in which lime, brick or coal have been loaded must also be cleaned. Do the carriers perform this service before placing the cars on orders for loading other commodities? Seldom. And yet the time necessarily consumed in preparing the car must correspondingly reduce the free time in which the shipper must load his freight.

It is the duty of the carrier to furnish cars suitable for the transportation of the commodity tendered. The car may be a suitable car and not be in a suitable condition.

The conditions surrounding the loading or unloading of cars on the public team tracks provided by the carriers frequently contribute to the accruing of demurrage. With the increase in the volume of traffic handled by our railroads and the increase in size and carrying capacity of the equipment provided have the carriers correspondingly increased and improved their team track facilities? Have they enlarged their public team tracks, paved the approaches to same, rebuilt their loading and unloading platforms and extended and improved their switching service? Not to an extent commensurate with the demands of the traffic of today as compared with the traffic of ten, fifteen or twenty years ago and it is within that period that their demurrage rules have been steadily reinforced and amended in the direction of greater stringency.

Solution of the Problem.

The solution of the demurrage problem does not lie within the application of a uniform code or system of rules and regulations. The system proposed will undoubtedly meet the approval of the railroads for it is about the most

drastic set of rules ever devised and affords more opportunities to assess and collect the one dollar per day than any set of rules now in force. Every point gained by the efforts of individuals and associations of shippers will be lost. Reciprocal and average demurrage rules will be a thing of the past and where the amount of demurrage now collected averages approximately \$25,000 per day, under the new rules it may be expected to average double that amount and with no corresponding benefit to the shippers.

The decision of the commission that demurrage rules and charges must be embodied in the traffics of the carriers should meet the approval of every shipper. It is right and just and having become an item of tariff charge to the same extent as the rate per cwt. or ton, what further necessity exists for the maintenance of demurrage bureaus? A carrier has the right to establish any rate it pleases as long as it is a published tariff rate, properly filed with the Interstate Commerce Commission. The law prescribes no minimum rate basis; that is left to the carrier to determine from a revenue standpoint; the law simply requires publicity.

Therefore why should not each carrier formulate and establish its own demurrage rates and rules, approaching uniformity as near as is consistent with the conditions that actually surround the handling of the freight? Every carrier is familiar with the conditions that exist at points on its own line or that surround the production and transportation of every description of traffic peculiar to the territory it serves. The railroads are not in swaddling clothes and each road is capable of protecting itself against abuse of its equipment by the few individuals who are sometimes disposed to do so. Let each railroad deal direct with its patrons in demurrage matters and let each case be handled absolutely upon its own merits and not be decided by a third party. No bureaus are maintained to regulate or collect freight rates or any other transportation charge; there are rate committees and associations but they do not intervene between the roads and their patrons as do the demurrage bureaus.

It may not be denied that the shippers have contributed their share towards the present unsatisfactory conditions; without citing cases of abuse of equipment by receivers and shippers I will suggest that each organization of freight payers direct the same amount of energy towards eliminating any abuse of equipment by its members as is expended in combatting the rules and regulations imposed by the railroads and demurrage bureaus. Let each member unload and release as many cars within the free time as is possible; do not consume 48 hours just because it is allowed but inspire your employees with a spirit that will produce the unloading of a car within 24 hours occasionally at least and for your own information and satisfaction keep a record of the handling of each car. Such records will, at some later date, afford invaluable evidence in support of any effort that may be made to obtain more reasonable demurrage laws.

And the lack of such evidence has done much to defeat the efforts made in the past. If a shipper keeps a strictly accurate account of the handling of every car loaded or unloaded by him, such record is as acceptable and powerful evidence as any records or any statistics introduced by the carriers before courts or commissions. In the past very few shippers have taken this precaution and when a demurrage case reaches the courts the shippers counsel is handicapped to that extent.

No Speedy Settlement Possible.

This question of demurrage will not be settled today or tomorrow, this year or next but will always obtain as a source of controversy and expense until the true principles involved are recognized by carriers and their patrons alike.

At present we are confronted with a proposition to wipe out all present and past rules and destroy every concession gained by introducing a new system in the formulation of which the shippers have had practically no voice and which are no more adaptable to actual conditions than the present rules and in many respects not equally so. This proposition should be defeated in the interests of every freight and demurrage payer in the land.

But the inadequacy of the present systems being already proven and the proposed system not acceptable, only to the carriers, the necessity for intelligent, co-operative action remains.

In the solution of the problem the greatest factor will be the determination of what is a reasonable time in which to load or unload commodities of various descriptions and cars of various size, under conditions peculiar to the time and place in which the loading or unloading is to be accomplished. In determining freight rates the necessity of classification has always been recognized and classification now forms the basis of the majority of rates in effect. The same necessity must be recognized in connection with demurrage and until it is so recognized the proper adjustment will not be accomplished.

I do not feel that I have done justice to my subject but it is as difficult to handle in this manner as in any other. No two instances of demurrage are alike in any respect except that in no instance does the receiver or shipper feel disposed to pay without protest and in every instance the carrier clamors for his "pound of flesh." Each case of disputed demurrage must be handled on its own merits which is simply one more argument against a blanket system of rules and charges.

Every statement I have made today is the result of my own experience in handling demurrage matters both for and against the carriers; I have always endeavored to view both sides of the question but it is often difficult to see around, under or over the demurrage bureaus and their rules. It is probable that not many will agree with me in some of the views that I have tried to express but in 18 years' experience I have never found two individuals of the same opinion on demurrage matters.

ERIE RAILROAD SAVED BY OWNING COAL CO

Only its ownership of a certain coal company keeps the Erie Railroad solvent today. E. B. Thomas of the Lehigh Valley Railroad said at the hearing of the government's suit against the Reading and other coal carrying railroads. The hearing was before C. H. Guilbert, a special examiner, in the Astor House, and Thomas was the first important witness of the day. He testified that when he was head of the Erie Railroad he purchased the Pennsylvania Coal Company, and that purchase saved the railroad from bankruptcy. The Pennsylvania Railroad wanted the coal company, but Thomas got there first.

INJUNCTION PROCEEDING IN A DISPUTE.

Injunction proceedings were started by the Monongahela River Consolidated Coal Company with offices in Pittsburgh against the Charleroi Fuel Company of Monongahela. Both companies are operating mines at and within the city limits of Monongahela, the two mines joining each other. The River company alleges that the Charleroi Fuel Company for some time has been encroaching on the River company's holdings in the way of driving entries, pulling ribs and not only taking the coal, but also damaging the River company holdings. The plaintiff company alleges that the Fuel company had been notified time after time of this encroachment.

COST OF PRODUCING COAL AT THE MINES

Address Before the Illinois and Wisconsin Retail Coal Dealers' Association, Chicago, June 29, 1909,
by CARL SCHOLZ.

The cost of the production of any commodity is of interest to the dealer and consumer. In order to handle an article satisfactorily, the dealer should know all about the method and cost of production. A satisfactory explanation to the consumer will frequently effect a sale which could not be made without it.

Much has been said lately as to the profits of trusts, be they real or imaginary, and investigations have been made of the operations of the Sugar Trust, the Beef Trust and the Tobacco Trust. It has also been alleged that a Coal Trust existed; but from an intimate knowledge of the business as applies to the bituminous fields, I am safe in assuring the Retail Coal Dealers' Association of Illinois and Wisconsin that no such trust exists or has existed. Unfortunately, the competition between the coal producing companies has been so active and keen that price reductions have been made which have put more companies in the hands of receivers than has ever been the case in the history of the coal business.

It can safely be said that few consumers realize the many items of expense entering into the cost of coal up to the time it is sold and ready for delivery; notwithstanding the fact that the average selling price of bituminous coal in the United States for the year 1907 was \$1.14 per ton and the production cost about five cents lower. In many instances, the production cost reported by the coal companies represents only the actual cost of labor and material, making no allowance for depreciation of the equipment, exhaustion of the coal or even interest on the investment. The production cost of Illinois coal for 1907 was slightly over \$1.00 per ton; the West Virginia cost was about 95 cents, and in the state of Washington \$2.05. To the general public, coal is coal, without much distinction as to the quality or preparation. Retailers appreciate the difference in grade, but few have a full conception of the great difference in conditions which lead to a varied range in cost.

The production of coal in the United States has increased at a very rapid rate. From an output of less than 5,000,000 tons in 1830, a total of nearly 500,000,000 tons was reached in 1908. This large output by no means represents the capacity of the mines, and it is believed that if necessary the present plants and equipment should produce fully four times as much tonnage. The inference naturally is that the mines operate spasmodically, depending upon various conditions, principally the crop and general business situation. This large capacity, and the desire of each operator to work his mine more constantly than his competitor or neighbor, has resulted in the making of very low prices and the necessity for low production cost has required the production of coal at such figures as resulted in waste of much valuable coal, which is irretrievably lost. This is not a healthy condition, and one which is deserving of most careful attention. If our coal resources were not so very large and well distributed, cognizance would have been taken of this feature, as is the case in many of the foreign countries. In Germany, for instance, the output of each mine is fixed by a Commission, and new mines cannot be opened unless a demand for the product exists. From this viewpoint, regulations are a necessity, but under our present

conditions and our form of government, no such methods can be adopted.

The coal fields of the United States, covering some 500,000 square miles, produce every variety of coal under almost every conceivable condition. A brief outline of the general items entering into the production will, therefore, be of interest.

In order to develop and operate a coal mine, an investment in coal property, equipment and machinery must be made. It is estimated that a mine with an output of 1,000 tons per day requires an investment of \$200,000, or \$1.00 per ton on the yearly production. With the present cost of coal lands, 5 cents a ton should be set aside for the depletion of coal, and the further addition of an interest charge of from 2 to 5 cents per ton should be made. A depreciation charge on the plant from 2 to 8 cents should be required for replacement of machinery and shrinkage, and mine development.

The largest item of expense in mining coal is wages, and but few realize that the mining rate paid the coal digger at the face of the room represents from 40 to 60 per cent of the total labor cost; because, in addition to the mining rate paid to the digger, he receives additional compensation for narrow work, such as entries, air courses, break-throughs, and room turning; for deficient work and the removal of slate from partings or roof, as the case may be. The other expenses for inside labor cover the wages of cagers, drivers, track layers, timbermen, rope riders, pumpers, motormen, mine examiners, shot-firers and foremen. Outside labor usually applies to the expense of hoisting and preparation, including engineers, firemen, dumpers, car trimmers, weighmen, carpenters and top foremen. The charge for superintendence usually includes the salary of the superintendent and his assistants, mining engineers, time keepers and accountants.

Another item of importance is the cost of material, which covers lumber, props, live stock, rails, pipe and pipe fittings, brattice cloth, explosives, mule feed, machine repair parts and many other items, too numerous to mention here. Insurance and the cost of personal injuries, a feature which unfortunately enters into mining and frequently results in litigation, cannot be overlooked. No reference has been made to the items of sales expense, which includes the salaries and expenses of traveling salesmen as well as the maintenance of offices.

The various states have at different times enacted legislation which is not only of no benefit to the workmen, for whose protection the law was devised, but works a decided hardship upon the coal producers and the state itself by curtailing the output, or increasing the waste of coal in the ground. These conditions are deserving of the closest scrutiny and investigation. It is believed that if the coal producers would fully and clearly present their case, they might obtain the co-operation of those interested in the selling price. Unfortunately, at this time coal dealers and consumers look upon the producer with more or less suspicion, and do not always believe that the presentation of their case as made is correct. It is scarcely reasonable to assume that in this age of enlightenment matters which are of such great importance will continue to receive scant attention.

A newspaper, which wanted to investigate the reason for the selling price of coal during a famine period, sent a correspondent to the coal fields to interview some of the miners as they returned from their work, and endeavored to ascertain why it was that the price of lump coal was three times greater than the mining rate. Little did the miner realize, or the correspondent, that lump coal represents only from 30 to 40 per cent of the product and is the cream of the production. The small coals may be likened to the skimmed milk, and are sold for less than cost. He further did not consider the other items of expense previously referred to.

In the organized labor states much money is expended by the coal companies during the periodical strikes and close-downs, which occur at the expiration of each wage agreement. If a mine is equipped to produce a certain maximum tonnage for three months of the year and only one-third of that tonnage is produced, it is not possible to diminish the cost correspondingly during the idle period and of course it is necessary to continue pumping and ventilation and to employ a number of men to keep the mine safe and in operating condition, when not hoisting coal.

It is unfortunate that bituminous coal cannot be stored to permit more regular operation throughout the year, although it is believed that the coal dealers can aid the operators in this direction, and the purpose of these remarks is to draw attention to this necessity.

I have said above that the average selling price of coal in the United States in 1907 was \$1.14 per ton; in West Virginia 99 cents, in Washington \$2.09, and in Illinois \$1.07 was the average price. It may be well to say, however, that much coal was produced below and much above these average prices. During that year the cost of producing machine-mined coal in Indiana, the cost of thin-vein coal in Illinois, and the cost of coal production in the McAlester district of Oklahoma, was as shown in the appended figures, all taken from the books of representative mines in the various districts, and each representing a single mine:

LACKAWANNA COAL COMPANY FORMED.

The Coal Vending Association of the Delaware, Lackawanna and Western, the organization of which was decided upon in compliance with its decision in the commodities case, was incorporated in New Jersey as the Delaware, Lackawanna and Western Coal Company. Its capitalization is \$6,800,000, and all the stock is common, with a par value of \$50 a share, the same as that of the railroad company. The incorporators are Percy R. Pyne of Princeton and Edward E. Loomis, and William Fahnestock of Hoboken. The com-

pany's charter authorizes it to mine, buy, sell, and otherwise deal in coal and other commodities. None of its officers will be an officer of the railroad company. The new company will buy Lackawanna coal at the mines and take over the selling business now conducted by the railroad company. As at present, the railroad will have the benefit of the coal traffic from its own mines and the merchandising of the coal will proceed as at present, though under different direction.

CHICAGO COAL DEALERS

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were free to all who wanted to take part. There were first, second and third prizes for every event, but only the winners of first prizes are given below:

The Cross Creek Coal Company baseball team won the game, each player being given a box of cigars for his good work. Other prizes were:

Horseshoe pitching, Killen, watch; 50-yard dash, Connelly, mirror; running broad jump, C. H. Dreiske, suitcase; standing broad jump, W. Birkland, military brushes; potato race, Roy Makemson, gold watch fob; ladies' 25-yard race, Miss Westwood, toilet set; ladies' stake finding race, Miss McGovern, six hand-painted plates; peanut finding contest, Mrs. Button, silver butter knives; ladies' quoits, Miss Kuhr, cut glass water pitcher; race for girls, Gertrude Smith, chatelaine bag; race for boys, Roy Buster, silver-backed hair brush.

An amusing part of the programme was the awarding of prizes for the best guessing.

For success in other contests Miss Davy was awarded a painting, Mrs. Carr a silver chatelaine bag, Miss McLaughlin a water color painting, Mrs. Walsh a cake and Mr. Bunker of O'Gara Coal Company an electric fan.

Altogether the day was most pleasant and enjoyable.

WHAT COAL MINE DEVELOPMENT DOES.

The prosperity that has come about as a result of coal-mine development is reflected in many ways. The influence of new blood not only has quickened the sluggish flow of commerce, but has inspired a spirit of energy and ambition in localities which previously had known little of the meaning of progress. It has given an impetus to individual effort that in numerous instances has revolutionized the careless and haphazard manner of living which prevailed a quarter of a century ago. Through its influence rural life has been made more attractive and conditions have been improved in a thousand ways.—*Louisville Courier-Journal*.

WASHER BUILT IN RECORD TIME.

The Smith-Lohr Coal Washer at Pana, Ill., was completed in record-breaking time, according to the contractor. The plant as it stands costs in the neighborhood of \$32,000, and is equipped with all the latest appliances to do good work in its line of duty. The contractor broke ground for the coal washer April 3, and had a contract to have same completed and in good running order by July 1, and in advance of this date, steam was turned into the works and the machinery commenced to move on May 30.

INVESTIGATE COAL LANDS IN URUGUAY.

Some time ago reasonable proof as to the existence of coal within the territory of Uruguay having been furnished, the government, after a careful inquiry, voted 25,000 pesos (\$25,850), to further the private investigations being made and pledged valuable mining concessions as well.

MARYLAND COAL PRODUCTION DECREASED 25 PER CENT

The annual report of John H. Donahue, of Frostburg, Md., state mining inspector, just submitted to Governor Crothers, says there were mined in Maryland in 1908, 4,166,443 short tons of coal, as against 5,532,628 short tons reported in 1907, showing a decrease of 1,366,184 short tons. Of the output for the year 1908, Allegany county produced 3,774,305 tons, of which 3,540,897 were mined by pick work and 233,408 tons by machines. Garrett county, which is becoming a factor in the Maryland coal field, produced 392,138 tons, all mined by pickwork. In Allegany county there were 39 machines in operation, as against 43 in 1907, a decrease of four. The total number of men employed in the mining industry in the state in 1908 was 5,996. The report says in part:

"The industrial depression throughout the country during the year 1908 caused duller times in the Maryland coal field than the people depending upon this industry experienced in many years. During the past year the miners had very poor work, and this caused many hardships to the miners. A great many new openings, however, were made in the smaller coal veins in the region. Nearly all these veins are an excellent quality of bituminous coal, and when the industrial conditions of the country become normal the Maryland coal field will be in condition to produce as much coal as in the past."

The inspector adds:

"In many places I found that the law had not been complied with as to the distance between the brake side of the mine cars and the rib—two and one-half feet. In every instance of this kind I called the attention of the mine authorities to these defects and in most cases my requests were complied with at once. I found that the main attention needed and nearly all of these are now in a good condition. It seems to me that some mine officials are not fully acquainted with the mining laws and for this reason I will have printed with this report a copy of the laws. In most cases I found the management making efforts to comply with the law to provide good air. Occasionally found instances where the law was being evaded. In such cases I insisted upon compliance with the law and on my next visit found satisfactory improvement."

"During the year there were 85 accidents in Allegany county and 12 in Garrett county. Nine were fatal in Allegany and three in Garrett."

The inspector was called a number of times to test scales where there were strong suspicions of injustice in weighing coal, but found the scales accurate in every instance. The report dwells on the hardships of the miner and the risks he takes, which "make the miner feel that he should receive full measure for every pound of coal he loads and to which he is justly entitled."

The report concludes by saying that "many fears have been expressed and opinions offered on the early exhaustion of the 'Big Vein.' Of this there need be no alarm. It is true during the early years of mining the 'Big Vein' there was always a 'rush' to fill the daily orders without regard to the economical removal of the coal, and much of the seam was left behind. But in recent years there have been improved methods in removing the coal, in ventilation, drainage and haulage, and with careful management there will be thousands of tons of this seam mined in Maryland for many years to come."

Glendale Consolidated Coal Co., Wheeling, W. Va., capital \$2,000,000.

NO CUT RATE FOR CARRIERS.

The Interstate Commerce Commission ruled that "one carrier shipping fuel, material or other supplies over the lines of another carrier must pay the legal tariff rates applicable to the same commodities shipped between the same points by an individual. If carriers insist upon making or maintaining preferential rates they may confidently expect that such voluntary action will be accepted as evidence of the unreasonableness of higher rates which they may undertake to enforce against other shippers." The case was that of the Hitchman Coal and Coke Company against the Baltimore & Ohio Railroad and others in which the request made by the Hitchman company that it be included in the freight group on the west side of the Ohio river, although its plant is in West Virginia, was denied by the commission, as to grant it would, in the opinion of the commission, "in all probability involve all the rate adjustments from the bituminous coal fields in the states of Ohio, Pennsylvania and West Virginia."

MINER'S UNIONS IN CLASH.

The strike of the United Mine Workers of America, which is regarded as a contest between that organization and the Provincial Workingmen's Association, the members of which latter organization remained at work, took place at the collieries of the Dominion Coal Company at Sydney, C. B., July 6. About 6,000 men failed to appear at the mines and both organizations claim the majority of the workers in the mines. The agitation of which the strike is the culmination has been in progress for nearly a year, over the efforts of officials of the United Mine Workers of America to secure recognition by the company operating in this province. American labor leaders have been strongly opposed by officials of the Provincial Workingmen's Association, and by the coal company, whose managers declared that the American labor leaders were seeking to divert the

TO ORGANIZE MINE WORKERS.

The United Mine Workers will seek to organize all West Virginia. This was decided upon at a convention of workers of District No. 17, which included practically all of West Virginia, at Charleston. National President T. L. Lewis presided. Before adjourning the miners recommended that the international organization take immediate steps to organize the miners of the state.

THE PROMOTION OF THE COAL INDUSTRY

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in order to retain their position and be re-elected—those fellows who go to state legislatures and the Congress of the United States—they say to the domestic consumers, they don't single those men out, but they are wise enough to know that the domestic consumers make up the great proportion of public opinion; they say, "You elect me to the legislature and I will have a law enacted that will make it a conspiracy for men in the coal business to form organizations in order to get better prices, and not only a conspiracy, but we will provide penalties that will send these coal dealers to prison; they are charging you too much for the fuel that they handle." The chances are if you were to ask these public servants how much it costs to produce a ton of coal they could not tell you. If you were to ask these public servants how much railroads and manufacturers pay for coal they would not be able to tell you. And because of these so-called conspiracy laws preventing men in the coal business from organizing or combining for the purpose of lifting this industry from the cheap level that it now occupies to a higher standard, and because of those laws even the operators are afraid to hold meetings in order to say to the railroad corporations, the steam trade people of this country, "You must pay us a higher price or we won't sell you the coal." Whenever they undertake to do those things they come under the ban of the same law that was supposed to have been made in the interest of the dear public.

What An Equitable Price Would Mean.

It is wonderful how we can prey on the minds of the American people when we have some selfish interest to advance. Conventions of this kind should discuss these questions, should deal with them, and extend their work and influence so that you can include in your society every man on the American continent who is directly or indirectly interested in the coal business. Then if the railroad corporations, if the manufacturers, were required to pay twenty-five cents a ton more for coal, what would it mean? It would mean that the salesmen representing the operators would go out and sell coal to the jobbers and to the retailer—that is, the domestic coal, at a lower figure, and allay a great deal of this very, very vicious sentiment that now exists in the minds of the American people. I believe the time is coming when we can bring this about. I recognize that it is going to take a whole lot of work. I recognize that it is going to require an enormous amount of boosting on the part of everybody to bring about those results. But it is worth the effort. I can remember, and I am not so very old, the time when it would be a seventh day wonder for a coal miner to go into a meeting where there were salesmen of coal. I remember the time when coal miners and coal operators were at war with each other to such an extent that none of us had any respect for each other, and nobody had any respect for either of us. But we are changing that. As we grow older we seem to be getting a little wiser. And while we will not be able probably to perfect the things we desire as miners and operators, those of us who have been engaged in this work can feel that we have loaned our influence, our time and our energy to a condition that when it is handed down to our sons and daughters they at least will be able to take it up and perfect the system that we had so much desired ourself to perfect. It will come just as sure as you are meeting in the Southern Hotel in St. Louis. It requires work; it requires agitation.

It requires organization, and over and above all it requires legislation. That will come if everybody will only do a little. Many of us who do not understand the coal indus-

try believe that it is a very unimportant institution. I can imagine of a condition where every miner would suspend work, every operator take a vacation, every salesman, every jobber, and every retailer would say we are so little respected in our business by the people of this country, by men in public life, that we have decided to quit, all of us, and we will see how the American people like it. I wonder what would happen? Instead of having a pow-wow in this assembly room there would be pow-wows on every street corner in the United States and they would be saying what is the matter with those fellows in the coal business? Why, we have quit. Well, but we want you to go back. Why? Because we can't get along without you. That is the secret of the whole business.

Whenever we demonstrate to the American people, the coal consuming public, that they cannot get along without us, they will be ready to tip their hats to you on every street corner and wherever they meet you; and instead of a coal salesman going into a buyer with fear in his heart and trembling in his knees, wondering whether he can make a deal that will give him a fair profit, he can walk in with his hat on the back of his head, a smile on his face, and say, "I am selling coal. I represent the most important industry in this country. Do you want any?" "No." "All right." It is not a question of what you want to sell it for. "Come back here. I didn't think you meant that." "Oh, well, I am a man of some importance. You have got to recognize me as such. If you want my commodity you have got to pay my price." Whenever they begin to realize that we will do better.

Dreams That Have Come True.

Some men say that is a dream. Everything is a dream until you put it into actual practice. It was a dream to attempt to run a boat with steam. It was a dream for men to run locomotives. It was a dream to talk over the telephone. It was a dream to flash your thoughts thousands of miles about the continent over the electric wire. It was a dream for men to travel in the air, in the opinion of some people. But all those things have become stern realities; and this question of lifting our industry out of the mud, so to speak, and placing it upon a higher standard is no more of a dream than all those other things that we have mentioned. There is nothing to it.

I want to make a statement, and I make it without any fear of contradiction: that the nation that can produce the cheapest coal will maintain its industrial and commercial supremacy over every other nation on the earth. And because of that is no reason why we should occupy the low level that we do in this country. That very fact in itself should be one of the best reasons why we are going to lift this industry from its present low level and place it on a higher standard.

Satisfied Man Too Good For Earth.

Some man may say: "Why, Lewis, aren't you ever going to be satisfied in life?" My answer is: "No, never." Whenever I see a satisfied man I think it is time to leave this earth for some other planet where he can enjoy himself. The idea of satisfied men in this world puts me in the mind of a story, and I am not a very good hand at telling a story, but this applies forcibly to this question of a satisfied man. Down in Texas a man advertised a farm of 180 acres of the best land in the state of Texas—and they have some very valuable land there—to any man who was a satisfied man, that he would give it to him. Why, naturally, people thought that he would have so

many men down there he would not know what to do with them. One man did have the nerve to go down there and call on this gentleman that owned this fine farm. "What are you here for?" "I came down here to claim that farm that you have advertised to give to a perfectly satisfied man." "Oh, you have?" "Yes." "Do you mean to tell me you have come down here to get this farm?" "Yes." "You mean to say you are satisfied." "Yes." "Well, why did you come down here to get this farm if you are satisfied?" The man wasn't satisfied. He wanted to get the farm. He would be satisfied then, and we don't know whether he would be satisfied then or not.

Work for Elevating the Industry.

Now, my friends, there are some other things in connection with this industry that we ought to do. You men who sell coal, who go out and meet everybody, devote a little of your time to something else besides selling coal and direct your attention to the industry. Ask men what they know about this industry; ask them if they realize the importance of this industry; ask them if they believe that the men engaged in this industry with their capital invested are entitled to any consideration from a monetary standpoint. If he says yes, then explain to him why he should encourage the forming of an organization in order to bring this industry to a higher plane, in order that we may be respected, not only in our material rights, but that we may enjoy some of the things that men in all other industries enjoy. I cannot conceive, myself, of any law that will compel a man to give away a commodity that he owns. I do not believe, even if there are any lawyers in this meeting, that they would say that you could enact a law that would compel me to give my coal to anybody; I should give my wheat to anybody or give my flour to any individual. If that is true, what has it got to do with the coal industry? It has this to do with it, the coal operators, the coal dealers, jobbers and salesmen—you know one mistake that I believe they make? Whenever you can go away somewhere and meet in a private dining room or a private parlor in any hotel with the fear of a bluecoat coming up to haul you in for a conspiracy, whenever you do meet in those places to discuss the price of coal, do you know what you generally do? You want to figure out how high a price you can get. (Applause.) You are always discussing the maximum figure that you can get for a ton of coal. I believe a man over here says the minimum. The operators are compelled to discuss the minimum, because it has got so low they don't know where it is going to stop. But the dealers don't discuss the minimum so much as they do the maximum. And most of the operators are always discussing the minimum, because it is always a higher price you are getting. I believe that they ought to change the policy.

Should Be a Minimum Price.

I believe that an effort ought to be made to get the operators of this country organized and agree on a minimum price of coal. And in the most favorable territory there should not be, in my judgment, a single ton of coal sold for less than \$1.25, run-of-mine.

Now, I believe that just as sincerely as I know that I am standing on this floor. Of course, that is another one of your dreams. It will always be a dream until we make it a reality. I hope to see the time come, and I want to say as an officer of the miners' organization, I am willing to take chances on hurting the feelings of the coal consuming public. I am willing to take chances on offending the dignitaries of the law in defending the proposition that coal should be sold at a minimum price per ton of a dollar and a quarter. I am willing to defend that proposition, can give reasons for it, because we have in this coun-

try now agitation about conserving our natural resources. Everybody is interested in that. And among our resources that public men want to conserve is coal. I want to protect our natural supply of coal. We want to conserve our natural supply of coal in this country; but we want to do something else. We want to protect to a greater extent the lives and the health of those men who go down in the mines and bring up the commodity to the surface. And if we are going to do that, how are we going to do it? Not by selling cheap coal, but by insisting on a higher price for that commodity in order that the men who own and develop and operate the mines can invest a little more in those appliances necessary to protect the lives and the health of our people. There is not anybody that can answer that question and say that it is an unfair one. Not at all.

Boost the Industry.

For that reason I want to lend what little influence I possess, what little time I can spare, what little energy there is at my command, to boost along the coal industry in this country from the men at the picks to the man who puts it in the bins of the coal consumer. If we all do our part, what are dreams now, in the near future will be stern reality. Lots of men say, what is the matter with the coal business now? I say there is nothing the matter with it. It has been bad enough, thousands of idle men on the verge of starvation, hundreds of mine owners on the verge of bankruptcy, and I don't know how many hundreds of coal dealers have been wondering what side of the bank book they are going to put the marks that will give them a profit—whether it will be to their credit or debit. I don't know how many hundreds of salesmen have been told to stay at home because there has been nothing doing in the coal business for a couple of years. But we are on the eve, and I believe that we are going now along the highway towards one of the most phenomenal industrial revivals that this country ever experienced, and it means that it will take men that will work and boost our business to make it a permanent institution, instead of every one grabbing about to take a temporary advantage for the few dollars he will make. Make it a permanent business. I think we will all be a great deal better off.

Evil of the Tariff Agitation.

Right in line with that I think if it were possible for the men who are here to say to Senator Aldrich, with all due respect to him and his colleagues, "If you men end this tariff discussion, shut up shop and go home, in order that the American people may get a rest and go on with business." If they will do that I am quite satisfied it would hasten this revival of business that is taking place, just as sure as you and I are here now.

You can take up any of the financial papers of this country, and what will you find? You find the banks with an abundance of money to loan. Take up the commercial and industrial periodicals of the country, and what do you find? Hundreds of men with unlimited intelligence ready to not only extend their present enterprises, but to go out and develop new ones and ready to borrow money on legitimate enterprises. Both of those great interests are holding themselves in suspense, the one wondering if they will loan their money whether it would be secure, the other wondering if they borrowed the money what the Congress of the United States is going to do next. And with this agitation of the tariff, the income tax, corporation tax, probably the next thing will be to tax the earnings of the wage earners. And we don't know where we are going to land. If the Congress of the United States would end a lot of foolish talking that is being done—not-

withstanding that they are exceptionally bright men—I am satisfied that inside of the next six weeks we would find everything in this country moving along at a very, very rapid rate. And the mining industry that is engaged in the production, sale and distribution of coal would be benefited. We are the last because we supply the energy that moves everything else. Everything else is beginning to move. It is only a question of whether there is a stimulus going to be given to it by Congress adjourning, or whether they are going to be held in suspense several weeks longer.

Miners Should Be Interested.

I am glad to have had this opportunity of expressing these few thoughts in a rambling manner. I hope that we will all get better acquainted. I trust, and I hope to see the time come when in such a gathering as this, that instead of one representative of the Miners' Union being invited to attend these gatherings, that we will take some part in these splendid meetings for the purpose of discussing our mutual relationship; that instead of having one representative here, that we might see the time come when we would have twenty-five, fifty, or one hundred miners, and as many operators along with all of you people to gather together in these annual pow-wows. I know it would do us all good. I know that it would do the American people good. I know that we could more forcibly impress on the minds of the people of this country the importance of our industry if we all worked together with one common end in mind, the up-lifting of the coal business to a higher plane. That is in line, as I understand, with your principles and your policies. I understand—I am glad to know that you discourage and you frown upon every man who is not a booster in this institution. And I am glad of it.

County Needs the O. K.

The very initials of your organization ought to be placed on this industry from one end of the land to the other. What does O. K. mean, if it does not mean all right in every sense? If you O. K. a check the banker will take it, if there is a responsible behind the O. K. If you O. K. anything and there is a responsible man behind it, it goes. And I take it that when the order of Kokoal puts its O. K. on the coal industry of this country you ought to make yourselves felt, and we will help in our little way to do what we can to that end.

I realize that it is warm, warm for you, as well as myself, and I want to take this occasion to thank you one and all for the honor conferred, not on me, but on that great organization that I have the privilege of representing—the United Mine Workers of America. When I accepted your invitation I regarded it as a great honor to be invited here, but I was not foolish enough, nor egotistic enough, to believe that that honor was paid to Tom Lewis, the coal miner, or Tom Lewis, the citizen. That honor was conferred on Tom Lewis because he is the executive head of the largest labor organization in the United States; an organization that has for its fundamental principles: Make your contracts through reason and intelligence and observe those contracts regardless of the consequences when they are once made.

I want to thank you one and all for the privilege of being here; the honor that you have conferred upon our splendid organization.

Plans for the completion of the United States naval coaling station on Point Loma, Cal., are now in the hands of the contractors, and it is expected that proposals for the construction work will be returned to the navy bureau of yards and docks by the end of the present month.

MINE GASES AND DUSTS THAT ARE EXPLOSIVE

To the widespread effort among mining men and scientists to lessen the dangers of explosion in coal mining the most recent printed contribution is a report by Rollin T. Chamberlin, published by the United States Geological Survey as Bulletin 383, entitled "Notes on explosive mine gases and dusts, with special reference to explosions in the Monongah, Darr, and Naomi coal mines." The Survey had begun a general investigation of the origin of gas in coal mines and the dangers due to the pressure of gas and coal dust, when the three terrific explosions mentioned, all occurring in December, 1907, diverted the inquiry for the time being to the more specific investigation of the conditions in these mines, on account of the exceptional opportunity afforded to observe the behavior of explosions on a large scale. Valuable inferences were drawn both from observation of the physical effects of the explosions and from analysis and study of gases and dusts collected in the mines.

Mr. Chamberlin describes experiments with coal bottled for long periods in a vacuum, to determine the rate of escape of methane and other inflammable gases, and reaches the conclusion, from various comparative tests, that the escape of fire damp into mines must continue very steadily for long periods of time from the solid coal as well as from distinct cracks and fissures leading back to storage reservoirs. Lack of ventilation in old workings may make the slow accumulation dangerous, but a much greater danger lies in rapid outbursts when a strong "blower" or reservoir of gas is encountered.

An interesting part of the report is the study of the deposits of dust in all parts of the exploded mines, indicating by their position the direction of the blast and the eddying currents and by their condition the character and causes of the explosions. Coal dust is shown to have played an important part in the propagation and extension of the

Old coal dust, long exposed to the air, is shown to be less dangerous than fresh dust close to the working faces so far as its chemical qualities go. The contrary has been stated occasionally in mining literature, but definite experimental evidence leads to the present author's conclusion.

One of the chief lessons learned from the explosions in these mines was the influence of the first touch of cold weather on the danger of coal-dust explosions. When summer air is cooled in a mine the condensation of moisture keeps the mine damp. When, with the approach of winter, the outdoor temperature becomes lower than that in the mines, the capacity of the inflowing air to absorb moisture increases and the mine is dried out. Hence, up to a certain point the better the ventilation during winter the drier and more dangerous the dust in a mine becomes. As good ventilation is indispensable to proper mining conditions, some means of reducing the dangers incident to it is much needed.

The striking difference between the charred, the uncharred, and the fresh coal dusts, with regard to their percentages of shale, gives rise to a definite practical suggestion that the liability of coal dust to explode may be reduced by the admixture of a large amount of very fine shale or similar adhesive mineral matter. This method would give more permanent security than sprinkling with water, which is effective for a time. A coating of mud, clay, shale, or whitewash on the ribs and props must so bind the coal-dust particles to the coal or timbers as to prevent the dust from being stirred into the air in every-day mining operation. Whether shale dust on the entry floors alone is sufficient to check a dust explosion once under way can be told only by experiment.

THE EXPLOSIVES TESTING STATION EQUIPMENT

(Continued from Page 324.)

piece of apparatus stands on the first floor in the east end of Building No. 17.

The bomb is bottle-shaped of half-inch wrought steel and has a capacity of 30 liters. On opposite sides near the top are bored apertures, one for the exhaust valve for obtaining a partial vacuum, or about 10 millimeters of mercury column, after the bomb has been charged; the other for inserting the insulated plug through which passes the fuse wire for igniting the charge. The bomb is closed with a cap, by means of which the chamber may be made absolutely air tight. The bomb weighs 158 pounds, is 30 inches high with cap on, and is handled to and from the immersion vessel by means of a small crane.

The inner receiver is 30 $\frac{3}{4}$ inches deep, 17 $\frac{3}{4}$ inches inner diameter, and is made of 1-16 inch sheet copper nickel plated, and strengthened on the outside with bands of copper wire. The outer tub is 30 inches deep, 21 inches inner diameter, is made of 1-inch lumber and is strengthened with 4 brass hoops on the outside.

The stirring device consists of a small wooden beam connected to a system of three rings, having a horizontal bearing surface, and is operated vertically by means of a worm-gear run by an electric motor. When the apparatus is put together the inner receiver rests on a small standard on top of the base of the outer tank. The rings of the stirring device run between the bomb and the inner receiver. The bomb itself rests on a small standard placed on the bottom of the inner receiver. The apparatus is provided with a snugly-fitting board cover.

The rise in the temperature of the water is read from a Centigrade thermometer measuring to the 1-100 part of a degree. The height of the mercury column is read by means of a magnifying glass.

The bomb is charged from the top, the explosive being suspended in the center. The caps are then screwed on, the apparatus set together as above described, first, however, exhausting the air to the desired degree of rarification.

The apparatus is assembled on scales before the water is poured in and the weight taken, and then the weight with the water in the receiver. By obtaining the weight of the water in this way and knowing the temperature, the calorific value may be computed. The capacity of the inner receiver is about 70 liters. The charge is exploded by electricity while the water is being stirred. By combining the quantity of heat of the explosive in calories with the specific heats of the products of combustion at the proper temperatures the maximum temperature of explosion may be arrived at.

Rate of Detonation Apparatus.

This apparatus is used to determine the velocity with which detonation travels through a given length of an explosive. For this purpose the explosive is placed on a long galvanized iron tube 38 millimeters in diameter and 1.22 meters in length and suspended in a pit provided for the purpose just outside of Building No. 17. This pit is 11 feet deep, 16 feet in diameter, and is provided with a steel plate casing backed by a cushion of sawdust and with a heavy cover consisting of large timbers, covered by reinforced concrete, and anchored to the ground with 8 dead men. By means of electrical connections at each end of the tube connected to the recording device known as Mettergang's Recorder, placed in Building No. 17, the interval of time elapsing between detonation at the two ends of the tube is measured on a smoked drum revolving with a known peripheral speed. In using two such lengths of

explosive as one meter it is obviously essential that very minute differences in time must be recorded. This recording device is conveniently equipped in such a way that a 1-100 part of a millimeter may be measured. The drum is 500 millimeters in circumference and its normal speed is 86 revolutions per second. The smallest time interval that can be measured therefore is 1-4,300,000 of a second. The usual length of explosive used is 1 millimeter and the sticks of explosive are, after cutting off their ends, placed end to end.

Flame Test Apparatus.

This apparatus was designed for measuring the length and duration of flame given off by explosives. It consists essentially of a cannon, a photographic instrument and a drum geared for high speed, to which a sensitized film may be fastened. The apparatus is placed at the northeast corner of Building No. 17. About 13 feet from the outside wall is set the foundation for the cannon and encasing cylinder of shell. Set on top of this is a cannon identical with the one used for Gas and Dust Gallery No. 1, the details of which are included in the description for that apparatus. The shell or cylinder is set on top of the concrete and is concentric with the cannon and is 43 inches internal diameter, 20 feet high, constructed quarter-inch boiler plate in 24 sections and made absolutely light-tight on the sides and base. Connecting this with a dark room in Building No. 17 is a light-tight conduit of rectangular cross-section 12 inches wide on the inside, horizontal on the bottom, sloping on the top from a height at the cylinder of 8 feet 3 inches to 21 inches at the inside of the wall of the building. It is carefully insulated from light by means of an oakum packing at the joints in the building, and when not in use two small steel doors isolate the dark room from the light leaking from the top of the shell. The conduit is riveted to the shell. A vertical slit is cut in the shell two inches wide and 3 feet long coincident with the center line of the conduit. A vertical plane drawn through the center line of the bore hole of the cannon and of this slit, intersects the center line of the quartz lens, the center of the stenopaic slit immediately in front of the film and the axis of the drum on which the film revolves. The photographic apparatus consists of a shutter; a quartz lens placed in such position as to focus the light, including the ultra violet rays, which are those attending extreme heat; a stenopaic slit between the lens and the rotary drum 76 millimeters long and 1.7 millimeters wide; a rotary drum 50 centimeters in circumference and 10 centimeters deep, geared to and driven by a 220 volt motor, which is connected to a tachometer reading in both meters per second and revolutions per minute. A maximum peripheral speed of the drum of 20 meters per second may be obtained. The speed is regulated by a rheostat. The drum, gears, shutter, lens, stenopaic slit, and connecting apparatus, are enclosed in a light-tight box for convenience so that the film may be left on the drum in position should the operator desire to leave the dark room.

One hundred grams of the explosive is used in the cannon and the firing line extends from the cannon to the dark room, from which place the shot is fired. The firing line is equipped with a stage switch as a precaution.

With the drum at rest the flame is shown on the film as a vertical line of a width equal to the stenopaic slit and by simple proportion the exact height of the flame may be determined. When the drum is in rapid motion of known velocity not only the height of flame but the duration may be

computed by measuring the lateral displacement on the film and applying it to the known peripheral speed.

Impact Machine.

This machine is designed to determine the sensitiveness of an explosive to shock. For this purpose a drop hammer is used, constructed in such a way as to meet the following requirements: (1) It is necessary to have a substantial unyielding foundation of constant temperature; (2) Minimum friction in the guide grooves so as to approximate the conditions of a freely falling body; (3) Prevention of escape of scattering of the explosive when struck by the falling weight.

The apparatus consists essentially of the following parts: An endless chain working in a vertical path operated by electricity and provided with 2 lugs equally spaced; a steel anvil upon which the charge of explosive is placed; a steel stamp pressing on top of the charge holding it in position; a magnetizing collar operating freely in vertical guides and provided with small jaws in the rear so placed that the lugs of the chain engage them; a steel weight which operates loosely in vertical guides and is drawn by the magnetizing collar to determinable heights when the machine is in operation; a demagnetizing collar which may be set at known heights and which is provided with a release for the jaws of the first collar, and recording device geared to a vertically drawn threaded rod which sets the demagnetizing device and thus determines the height of fall of weights.

The apparatus is supported by a concrete pedestal which is set at a convenient height for the operator. The heavy oval-shaped steel base of the machine itself is anchor-bolted to this pedestal and into the base is screwed the anvil on which the charge of explosive is placed. The main standard of the apparatus is about 65 inches high and 2½ inches diameter shrunk into a flanged collar which is screwed into the base plate at the rear. The collar guides are ⅝-inch rods and extend from a plate securely fastened to the top of the flanged collar at the base of the main standard to the plate of the apparatus. The steel stamp which transmit the blow of the fallen weight is 7½ inches high, 1-2-16 inches in diameter, tapered at the base to a small cylinder ⅜ inch high and ⅝ inch in diameter, which operates at the center of the anvil. The drop hammer weighs 2,000 grams, moves in loose fitting guides which produce a minimum of friction. The hammer is dropped from varying heights until detonation takes place. A maximum safety height is determined when five attempts to explode a charge fail at that height, and if five or less attempts at that height, plus one centimeter give at least one explosion. Care is taken that the anvil and stamp are well cleaned after each test. The whole apparatus when not in use is covered with oil and provided with a hood.

In order to maintain a uniform temperature while experimenting, water at a temperature of 25 degrees centigrade flows through the anvil.

The Explosion by Influence Tests.

For this test the pit described above under (6) is used, and two sticks of each explosive is required. The sticks are placed end to end, separated by a certain distance, always a multiple of one inch, and the pair suspended in a vertical position. The lower stick is detonated, and the upper stick either is or is not detonated, depending upon the distance between the sticks and the sensitiveness of the explosive to the other by influence. The maximum distance of explosion by influence is established if the second stick explodes at that distance and fails to explode three times at that distance plus one inch.

This test is performed in the pit described under (6) and the explosive is placed in a hydraulic pipe having an

inside diameter of 1½ inches. One end of this pipe is closed with a plug, the other end being free. The fuse is placed in the free end and the explosive burns toward the plug end. Insulated annunciator wires are placed through the explosives one meter apart and the time of burning is indicated by sparks on the Mettengang's Recorder, but the time interval between the sparks is taken by means of a stop watch. Care is taken that the density of the explosive is normal.

Bichel Pressure Gauges.

These gauges are used for determining the strength of explosives by measuring pressures developed in an enclosed space in which an escape of general gases is rendered impossible. The apparatus consists of a stout steel cylinder which may be made absolutely air tight, an air pump and proper connections for exhausting the air in the cylinder to a pressure of 10 millimeters of mercury, an insulated plug for providing the means to ignite the charge, a valve by means of which the gaseous products of combustion may be removed for subsequent analysis, an indicator and drum, with proper connections for driving it at a known speed.

The apparatus is installed in the southeast corner of Building No. 17. The cylinder rests on a solid concrete footing at a convenient height for handling. It is 31½ inches long, 9¾ inches diameter, and anchored to the footing. The explosion chamber is 10 inches long and 17⅞ inches in diameter, having a capacity of exactly 15 liters. The cover of the cylinder is a heavy piece of steel held in place by heavy steel studs and nuts and a yoke.

The charge is placed on a small wire tripod, and connections are made with a fuse to an electric firing battery for igniting the charge. A near-vacuum is produced by means of an air pump in order to more nearly approach the conditions of a tamped charge exploding in a bore hole inaccessible to air. When the charge is exploded a record is made on the indicator card and is a rapidly ascending curve for quick explosive grading into a shallower curve slowly rising for explosives of slow detonation. When the gases cool, the curve merges into a straight line, which indicates the pressures, of the cooled gases on the sides of the chamber.

Since the volume of the chamber is nearly 75 times that of the volume of the charge, the pressure of the charge confined in its own volume may also be found. The cooling influence of the inner surface upon the gaseous products of combustion is a vital point in computing the pressure developed by an explosion. Its effect is eliminated by comparing the pressures obtained in the original cylinder with those of a second cylinder of larger capacity into which has been inserted one or more steel cylinders, thus increasing the superficial area while keeping the volume constant. By comparing the effect of the increased cooling surface with the original a curve may be plotted which will determine the actual pressures developed after the elimination of the surface influence.

Black Powder Separator.

The separator is made similar to the separators used in powder mills but of reduced size. It consists of an inclined box provided with slots on the sides to carry a series of screens, and a vertical conduit at the end for carrying off the screened products into different small bins standing on each side of the apparatus. At the upper end of the screens is a small hopper with a sliding brass apron to cut off the feed. The screens are shaken laterally by means of an eccentric rod operating by hand. The inclined box is 6 feet 10 inches long from tin to tip and set at an angle of 9 degrees with the horizontal.

The grains after separating fall 24 inches through the

vertical conduit, thence passing on to the bins through small zinc chutes inch by two inch sections. The apparatus is supported by wooden frame work and care has been exercised to have no steel nor iron exposed to the powder. The screens are held by light wooden frames which slip into the inclined box from the upper end. In this way any or all screens may be used at once, thus separating all grades or making only such separations as are desired. The screens with the largest meshes are diagonally perforated zinc plates; the finer meshes are obtained by silk screens.

Zinc Plates (Circular Holes.)

Diameter of hole in parts of an inch.	Number of holes per square foot.
1/2	353
4/10	518
1/3	782
1/4	1,392
1/5	1,680
1/8	3,456
1/10	6,636
1/16	12,800

Silk Screens (Square Holes.)

Dimensions of holes: 1/20 inch by 1/20 inch, and 1/28 inch by 1/28 inch.

Up to a few years ago black blasting powder was manufactured in the following sizes:

CC	from 2 to 2½ mesh
C	2½ to 3
F	3 to 5
FF	5 to 8
FFF	8 to 16
FFFF	16 to 28

In late years there has been quite a demand for special sizes and mixed grains for individual mines, especially in the State of Illinois. As there has not been any material change in the brands, the letters, as now used, are not indicative of the size of grains they are supposed to represent.

Twenty-nine samples of black blasting powder were recently received from the Illinois Powder Commission. This Commission is composed of 3 miners and 3 operators and its object is to settle all disputes that may arise between miners and operators in regard to the kind of powder used. Of the twenty-nine samples submitted, only 10 contained 95 per cent of the size of grains they were supposed to represent; 4 contained 90 per cent; 7 varied from 80 to 90 per cent; several others were mixtures of small and large grains and were branded (FF) black blasting powder while one contained only 8-5-10 per cent of the size of grains it was supposed to represent, and the remaining samples showed many variations even when sold under the same name.

This practice is exceedingly dangerous for the reason that a miner after becoming accustomed to the use of one brand of FF powder of uniform separation, receives another make of similar brand but of mixed grains and the consequence is he cannot gauge the amount of powder to be used. The result is often an overload or a blown-out shot while at the same time the smaller grains will burn first and the larger ones may be thrown out before the combustion is complete.

It has been suggested by the Illinois Powder Commission that a committee of powder manufacturers and the Illinois Powder Commission meet at the United States Testing Station at Pittsburg and discuss this question. It is believed that the powder manufacturers would welcome a universal classification of grains in the adjustment of the situation.

After an extended series of tests had been completed

under various conditions for the purpose of standardizing and calibrating the apparatus, a series of test requirements has been established to which explosives submitted for test shall be subjected, as follows: The tests will be made by the engineers of the United States Explosives Testing Station at Pittsburg, Pa., in gas and dust gallery No. 1. The charge of explosive to be fired in tests No. 1, 2, and 3 shall be equal in disruptive power to ½ pound of nitro-glycerin dynamite in its original wrapper, of the following formula:

Nitro-glycerin	40 per cent
Nitrate of sodium	44 per cent
Wood pulp	15 per cent
Calcium carbonata	1 per cent

100 per cent

Each shot shall be fired with an electric fuse of sufficient power to completely detonate or explode the charge, as recommended by the manufacturers. The explosives must be in such condition that the chemical and physical tests do not show any unfavorable results. The explosives in which the charge used is less than 100 grams will be weighed in tin foil without the original wrapper. The dust used in tests 2, 3, 4, and 5 will be of the same degree of fineness and taken from one mine.

Test 1. Ten shots with the charge as described above, in the original wrapper, shall be fired, each with 1 pound of clay tamping, at a gallery temperature of 77 degrees F., into a mixture of gas and air containing 8 per cent of methane and ethane. An explosive will pass this test if all 10 shots fail to ignite the mixture.

Test 2. Ten shots with charge as previously noted, in its original wrapper, shall be fired, each with 1 pound of clay tamping at a gallery temperature of 77 degrees F., into a mixture of gas and air containing 4 per cent of methane and ethane, and 20 pounds of coal dust, 18 pounds of which are to be placed on shelves laterally arranged along the first 20 feet of the gallery, and 2 pounds to be placed near the inlet of the mixing system in such a manner that all or part of it will become suspended in the first division of the gallery. An explosive will pass this test if all 10 shots fail to ignite the mixture.

Test 3. Ten shots with charge as previously noted, in its original wrapper, shall be fired, each with one pound of clay tamping at a gallery temperature of 77 degrees F., into 40 pounds of bituminous coal dust, 20 pounds of which is to be placed on side shelves in sections 4, 5, and 6. An explosive will pass this test if all 10 shots fail to ignite the mixture.

Test 4. A limit charge will be determined within 25 grams by firing charges in their original wrappers unstemmed at a gallery temperature of 77 degrees F., into a mixture of gas and air containing 4 per cent of methane and ethane and 20 pounds of bituminous coal dust, to be arranged in the same manner as in Test 2. This limit charge is to be repeated 5 times under the same conditions before being established.*

Up to the present time we have completed tests on 29 different explosives, 17 of which have passed all tests. It has been found that the permissible explosives having a nitro-glycerin base have the highest limit charges, and, that the average permissible explosive produces about the same amount of inflammable gases as ordinary black blasting powder when charges equal in disruptive force are compared. From the results of our tests it is my opinion that several of the permissible explosives, if properly used, would produce as good a quality of coal as black powder.

Several hundred tests have been made with blasting

*NOTE.—At least two pounds of clay stemming will be used with slow burning explosives.

powder in the presence of bituminous coal dust and in every case an ignition of the dust has occurred.

A series of tests has been commenced to determine the amount of moisture necessary with different coal dusts in order to reduce the liability of a coal dust explosion, caused by a blown-out shot of one of the dangerous types of explosives.

Coal dust taken from the roads of one of the coal mines in the Pittsburgh district requires at least 12 per cent of water to prevent an ignition, under the conditions stated above. It has also been proved that the finer the dust the more water is required and dust of 100 mesh fine necessitates 30 per cent water to prevent an ignition when the flame of a blown-out shot is in direct contact with the dust. The usual methods now employed in sprinkling have proven entirely insufficient to thoroughly moisten the dust and are unreliable as far as a prevention of a general dust explosion is concerned.

At this station successful experiments have been carried out by using humidifiers to moisten the atmosphere after the temperature of the air outside the gallery has been raised to a mine temperature and drawn through the humidifiers. It has been found that if a relative humidity of 90 per cent at a temperature of 60 degrees F. is maintained for 48 hours, a simulation of the summer conditions in a mine, the absorption of moisture by the dust and the blanketing effect of the humid air prevented a general ignition of the dust.

Humidifiers have been used in all tests so far made for

the purpose of raising the percentage of relative humidity, but it is very evident that steam or other spraying devices would be equally effective.

It is unquestionable that many mines could be successfully and advantageously equipped with spraying devices, but in some cases it may not be practical, due to an insufficient supply of fairly good water.

It is expected that the results obtained at the testing station will be supplanted under actual working conditions in the mines. The contention, lately pointed out, as to the disadvantages of spraying, due to increase in falls, can be definitely determined and weighed against the advantages given by the protection from dust explosions.

COAL TRIMMING MACHINE TESTED.

A machine designed to trim coal and other stuff in the holds of vessels was tested in the United States naval collier Caesar at Lambert's Point, Va. The test was highly satisfactory to the exploiters of the machine, the Mechanical Trimming and Loading Corporation, and a board of naval officers detailed to witness it. The test was made for the navy, the official board being composed of Captain Quinby, Commander McAlpine, Lieutenant-Commander Cunningham and Coal Inspector Wynne. The machine is dropped through the hatch of a vessel and as coal or other cargo which requires to be loaded in like manner drops from the chute it is distributed evenly around the hold of the vessel, doing away with the necessity for trimming by hand.

T. N. KOEHLER, Pres. F. A. KOEHLER, Secy.
Wilmington Coal Washing Co.
 293 Dearborn Street.
 Works BRACEVILLE, ILL. Harrison 2407. CHICAGO

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PUBLIC NOTICE is hereby given that on the eighth day of May, A. D. 1909, at the hour of 11:00 o'clock A. M., pursuant to due notice, a Special Meeting of the Stockholders of the Deep Vein Coal & Coke Co., was held at the office of the Secretary, 1108 Fisher Building, City of Chicago, Cook County, Illinois, and a resolution unanimously adopted in favor of and providing for the voluntary dissolution of said corporation, and directing the officers of the corporation to abandon the corporate enterprise, and to surrender the charter, franchises and corporate name of the corporation; and that all of the corporate debts have been fully paid, and the corporate assets and property of said corporation distributed among the persons entitled thereto, as provided by law.

Dated, Chicago, Illinois, July 10, 1909.

JOHN PYNCHON,
 M. C. PUTNAM,
 GEO. C. MASTIN,
 Directors.

July 13-20-27

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SOUTHERN COAL MEN GETTING THE PROPER IDEA

Retail coal dealers of Nashville, Tenn., have effected an organization to correct abuses in the local trade. Charles W. Jackson was elected temporary chairman and W. P. Finney temporary secretary. The permanent officers are: R. Hayden Lee, president; D. H. Pinner, vice-president; W. R. Manier, secretary and treasurer. The executive committee will be composed of the officers of the organization together with Matthew Cayce, Joe Lightman, Luther Hale, C. W. Jackson, James R. Love and John D. Sharpe.

The purposes of the organization are set out in the following extract from the constitution adopted:

The promoters of the organization had previously prepared a complete constitution which was read and unanimously adopted without change. Among other things the articles stated:

"The object of this organization is and shall be to secure the co-operation of the coal dealers of Nashville in all legal and legitimate projects that may affect their common welfare; to abate trade abuses and prevent by legal means short weighing and all other fraudulent and dishonest practices in the sale and delivery of fuel; to encourage the co-operation of the manufacturer, wholesaler and retailer; to establish a system for the interchange of credit and other information and the collection of bad accounts; to advocate such legislation regarding the coal industry as will be of benefit to the general public; and to aid activity in the enforcement of all laws and ordinances governing the mining, shipping and distribution of fuel.

"No rules, regulations or by-laws shall be adopted in any manner stifling competition, limiting production, restraining trade, regulating prices, pooling profits or doing anything whatsoever in conflict with any law."

COAL OPERATORS SHOULD ORGANIZE.

National President T. L. Lewis, of the United Mine Workers of America, who was called to Charlestown, W. Va., to preside at a convention of District No. 17, gave out the following statement concerning mining conditions:

"It is well known that the mining industry is the cheapest of any of our industries. There is more risk to those employed in the industry, and there is less return on capital invested than in other industries. This is due to the fact that there are many operators who want coal produced for practically nothing in order that they can give the commodity away with very little profit, and especially is this true in its application to the steam coal consumers.

"It may not be generally known, but it is true that the railroad corporations and large manufacturing industries purchase coal from the operators at such a price that there is little or no margin of profit in the mining business. To make a reasonable profit the operator must charge a much higher price on coal than he sells to the domestic consumer. This means that the masses of the people who can least afford it are compelled to pay the higher price for fuel in order that the operator may earn a little profit on his business.

"The remedy is for the operators to organize. Not to demand extortionate prices from the domestic coal consumers, but to compel the steam coal consumers to pay a fair price for every ton of coal they purchase."

O. L. GARRISON, President	H. H. TAYLOR, Sec. and Treas.
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NORTHWESTERN OFFICE: Security Bank Bldg., Minneapolis, Minn.							
Shawnee, Ohio Sullivan, Indiana Marion, Illinois	<table border="0"> <tr> <td rowspan="3">{</td> <td rowspan="3">MINES</td> <td rowspan="3">{</td> <td>Pawnee, Illinois</td> </tr> <tr> <td>Sherman, Illinois</td> </tr> <tr> <td>Nokomis, Illinois</td> </tr> </table>	{	MINES	{	Pawnee, Illinois	Sherman, Illinois	Nokomis, Illinois
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						Sherman, Illinois	
		Nokomis, Illinois					

DONK BROS. COAL & COKE CO.										
MINERS AND SHIPPERS OF ILLINOIS COALS										
Capacity of Mines 6000 Tons Daily	<table border="1"> <tr> <td>Mines Located at</td> <td></td> </tr> <tr> <td>DONKVILLE, ILL.</td> <td></td> </tr> <tr> <td>MARYVILLE, ILL.</td> <td></td> </tr> <tr> <td>TROY, ILL.</td> <td></td> </tr> </table>	Mines Located at		DONKVILLE, ILL.		MARYVILLE, ILL.		TROY, ILL.		Cap. of Washers 2000 Tons Daily
Mines Located at										
DONKVILLE, ILL.										
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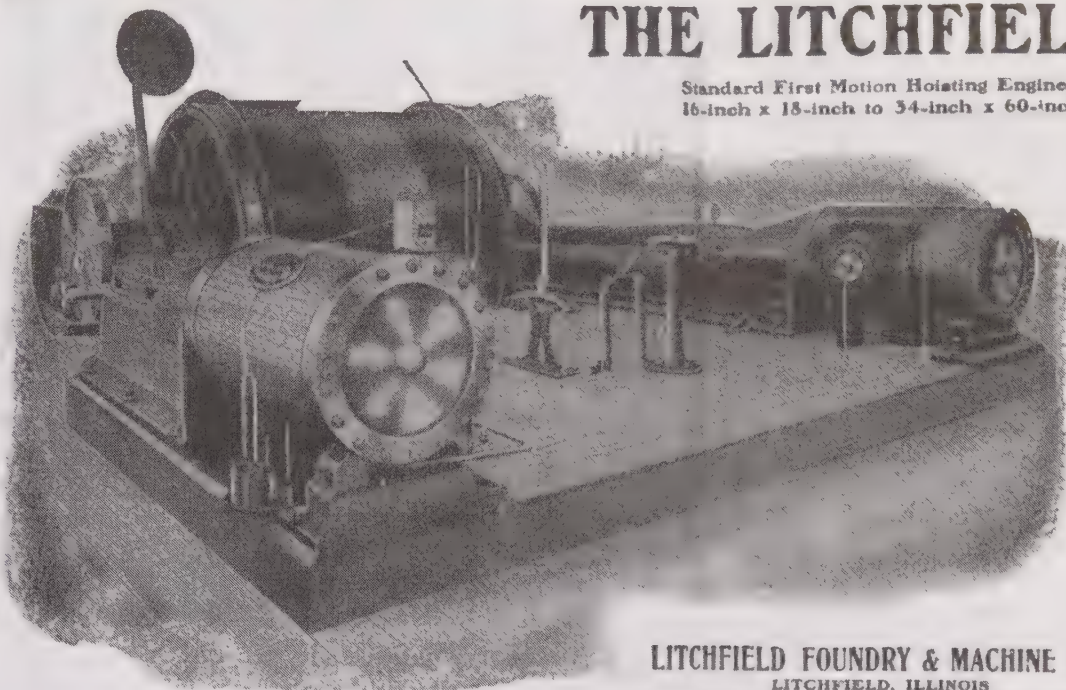
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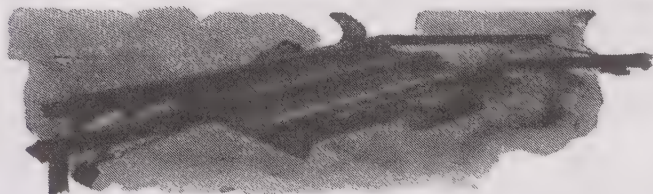
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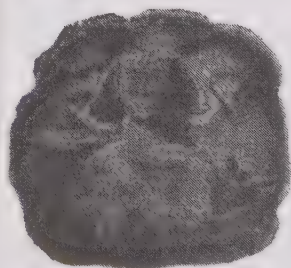
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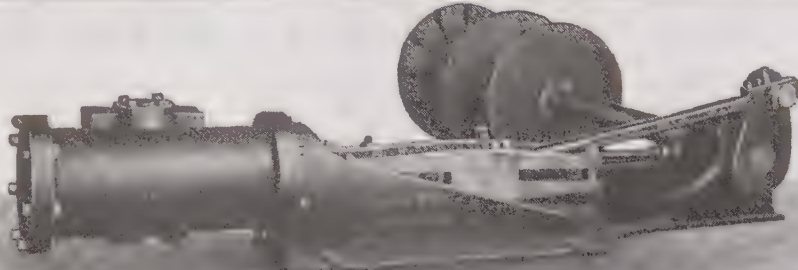
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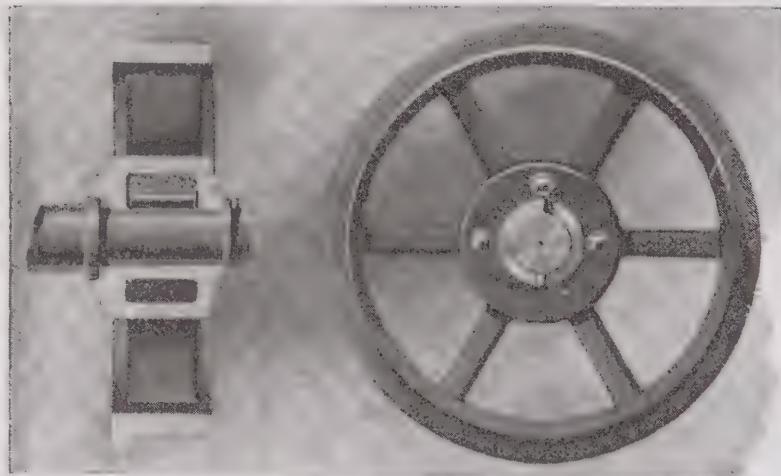
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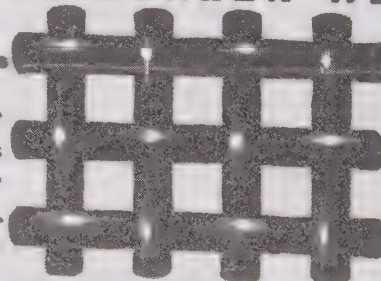
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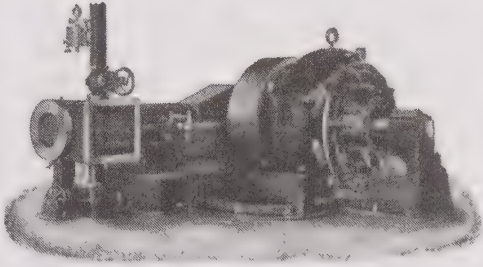
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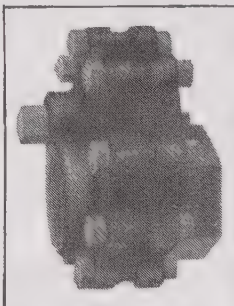
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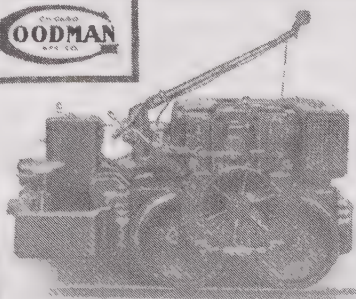
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(3)

FUEL

A WEEKLY JOURNAL DEVOTED TO COAL, COKE & KINDRED INDUSTRIES

Vol. XIII. No. 13.

CHICAGO, ILL., JULY 27, 1909.

Price \$2 Per Year.

THE MINING SITUATION IN ILLINOIS

District President Duncan McDonald Denies That There Has Been a General Resumption of Work and Says Requests for Assistance Are Coming in Frequently to the State Headquarters—Other Illinois Items of Interest.

The reported steady increase in the output of Illinois coal mines is not expected, at least by the United Mine Workers of America, according to Duncan McDonald, president of district No. 12. In reply to a published article at Springfield, he says:

"I desire to say that if there is any resumption of work throughout the state, it is entirely unknown to us, as every day or two a mine closes down, and not a week has passed for several months but what we have been informed at this office that a mine has suspended operation indefinitely in some part of the state. At the present time some forty mines are closed and about 40,000 of our members are employed from five hours to two days a week, and fully that many are not earning sufficient money to provide the necessities of life, and as we see it there is not much prospect of a general resumption of work nor is there a noticeable improvement.

"It is true a number of mines that are owned by various railroad interests are operating more regularly than those owned by private mine owners, but they are filled to such an extent that even their earning power is reduced.

"The average earnings of the miners ordinarily is less than \$400 per year, and if the present conditions continue it will be far below that. Perhaps a dozen mines out of more than 300 in this state are operating with some degree of regularity and such statements as appeared in your paper of yesterday are not only misleading to the public but are adding insult to injury so far as the miners are concerned, and when you state that the officials of the United Mine Workers made these statements, they are simply placed before our members in a ridiculous manner because the members know they are absolutely untrue.

"Many of the mines in Illinois have been closed down since last fall and the miners have been compelled to ask for assistance from the treasury that we have to assist members in distress, and the letters that we receive daily from the various mining towns throughout the state are a safe indication as to the progress of work in those places, and as these requests are increasing almost daily, they fail to correspond with the statement which has been sent broadcast."

Threatened Race War Alleged.

The attention of the Federal authorities here has been called to an impending race war in Pocahtonias, a coal mining town lying half in Madison county and half in Bond county, northeast of East St. Louis. Coal mining is the principal industry. The original inhabitants have risen up against the Russians, who are appearing in increasing numbers to work the shafts. The situation became more strained this week when threatening letters were received by the different landlords who are renting houses to the Russians. In these letters the statement was made that if these people

were not put out of the buildings at once the houses would be destroyed.

To Build Short Coal Road.

The Sandoval & Centralia Railroad Company will build a line about five miles long, starting at a point three miles north of Centralia, on the Burlington railroad, thence northeast to the coal mines at Sandoval, intersecting with the Illinois Central at that place. Condemnation proceedings for a right of way through Meridian township have been started in the county court here. The line will be a branch of the Burlington for the purpose of hauling coal.

New Machines in Catlin Mine.

The machines, with which the mine at Catlin, Ill., has been equipped, were started the first of the month, and although considerable trouble was experienced at the outset, this is gradually being overcome and it is predicted that the work will go right along hereafter. These are the first devices of the kind ever used in the mine and the change seems a trifle strange to the men who have been working so long under the old method.

The Devlin Properties Transferred.

The final transfer of the Devlin Coal properties at Toluca to the Jackson-Walker Company, Topeka, Kan., by the trustees in bankruptcy has been made; representatives of the Kansas company being on hand to draw up the final papers with Attorney Boys and the other two trustees. It will be remembered that the properties were sold to the Jackson-Walker Company several months ago for a half million dollars. It is rumored that the new owners are contemplating some extensive improvements in the Toluca mine, which is one of the richest coal properties in the state.

The County Examining Boards.

The terms of the county boards of 535 mine examiners having expired, they are being filled, usually by reappointment. According to the law the members are only paid \$3.50 per day for each day they serve and actually lose money on the few days it requires each year. The duties of the first board have been more strenuous than their successors will be, owing to the fact that it had to organize the system and decide on many points that arose which will be used as precedents by succeeding boards. Many of the examiners are not inclined towards another term.

Bad Spirits Deceived Him.

Six years ago Jacob H. Lesher, then a millionaire, began investments in Ohio coal mines that finally cost him

\$400,000. Now he is penniless. He was induced to invest by alleged advice coming from former Senator Bryce of Ohio, it is said, through a medium known as Mrs. Spencer at Lima, O.

"Put your money with Jim," was the advice of this supposed communication from the spirits. He accordingly invested freely with James B. Townsend, who was organizing the Symmes Valley Coal Company.

The failure of these investments left Lesher hard pressed and his numerous creditors in New York demanded an assignment of the assets of the Lesher Woolen Company, in which the rest of his fortune was invested. He is the husband of May Bangs, the Chicago "spirit painter."

BRIQUETTING OF COAL: RECENT VALUABLE PAPERS

The awakening of the people of this country to the desirability of adopting every possible means of preventing waste in the use of natural resources lends interest to three recent publications by the United States Geological Survey bearing on the subject of coal briquetting—a process by which slack and fine coal that was formerly considered almost or quite worthless can be converted into valuable fuel.

One of these papers, "Binders for Coal Briquets," by J. E. Mills, issued as Bulletin 343, describes the characteristics of good briquets and the conditions governing the use of binders (the mineral used to hold the coal particles together), and gives the results of laboratory investigations of various building materials, both inorganic and organic.

Mr. Mills states that the practical problem is not how to make the best possible briquet, for the slack may be inferior and the best binder too expensive for local conditions, but how to produce at a profit a briquet that is satisfactory for the use intended. The experiments reported show that, in general, the three most important binders are (1) the heavy residuum from petroleum, often known to the trade as asphalt, (2) water-gas tar pitch, and (3) coal-tar pitch, the first named requiring the smallest percentage and costing the least. Coal-tar pitch is derived from coal and is therefore widely available; the other two binders named, being derived from petroleum, can be had in most oil regions. The notes given by Mr. Mills cover 44 different binders, including wood products, sugar-factory residues, starch, tars and pitches from coal, natural asphalts, petroleum products, etc.

Another paper (Bulletin 363), entitled "Comparative tests of run-of-mine and briquetted coal on Locomotives," by W. F. M. Goss, is prefaced by notes on the briquet industry in Germany, Belgium and France, and includes the specifications for briquetted fuel used by the state railways of Prussia, Belgium and France and by the Paris-Orleans Railway. The body of the paper describes comparative tests made at the locomotive testing plant of the Pennsylvania Railroad at Altoona, Pa., with a friable, low-volatile bituminous coal from a bed near Lloydell, Pa., both raw and briquetted. It is fully illustrated by diagrams. The conclusions reached by Mr. Goss are favorable to the use of briquets. The paper includes also notes on tests of briquets in actual service on locomotives and on the torpedo boat Biddle. A series of tests on the Atlantic Coast Line Railroad, with New River coal and briquets, under practically identical conditions, gave results decidedly in favor of the briquets, the amount of fuel consumed per car mile being 15.8 pounds of coal, against 12.5 pounds of briquets.

A third paper (Bulletin 366), by D. T. Randall, is entitled "Tests of coal and briquets as fuel for house-heating

boilers." This paper describes tests conducted in the plant used to heat the structural-materials laboratory of the Geological Survey at St. Louis and in that of the University of Illinois Engineering Experiment Station at Urbana, Ill. These tests showed no advantage in the briquets over coal of a suitable size for house-heating boilers. Briquetting a good bituminous coal for domestic use would be justified only when slack is used for material, and the gain from briquetting would lie almost entirely in the more favorable size of the fuel.

These bulletins may be obtained free on application to the Director of the Geological Survey at Washington, D. C.

COKE IN COLORADO AND UTAH.

In the Geological Survey's annual report on mineral resources of the United States the statistics of the manufacture of coke in Colorado and Utah are combined in order not to divulge individual operations, there being but two establishments in Utah, both of which are owned by one company. The production of the two states in 1908 amounted to 982,291 short tons, valued at \$3,238,888, against 1,421,579 short tons, valued at \$4,747,436, in 1907. The decrease in 1908 was 30.90 per cent in quantity and 31.78 per cent in value. The average price per ton declined from \$3.34 to \$3.30. A notable increase is observed in the percentage yield of coal in coke during 1908, as compared with preceding years. This is probably due to the larger proportion of coal which was washed before being charged into the ovens. In 1908 nearly 75 per cent of the coal used for coke making was washed, while in 1907 only a little more than half of it was washed. There were 18 coking establishments in the two states during 1908, the same as in the preceding year. The total number of ovens noted was 4,705, an increase of 22 over 1907. Of the 18 establishments six, having a total of 1,169 ovens, were idle throughout the year.

For several years prior to 1906 practically all of the coal used in the manufacture of coke in Colorado and Utah was slack, a large proportion of which was washed before being charged into the ovens. In 1906, however, 708,306 tons of run-of-mine coal was used, of which 703,440 tons was washed. In 1907 the run-of-mine coal used decreased to 679,182 tons, of which 676,226 tons was washed, and in 1908 there was a further decrease to 237,540 tons, all of which was washed. The amount of slack used in 1908 amounted to 1,308,504 tons, 900,971 tons of which was washed before coking.

GEORGIA COKE PRODUCTION IN 1908.

Dade County, in the extreme northwest corner of Georgia, contains a small area of the Walden Ridge (Tennessee) coal basin, and a portion of the adjoining county, Walker, is underlain by an extension of the Lookout Mountain beds of Alabama. Coal mining on an extensive scale is carried on in both counties, and coke of a good grade is made from the slack coal produced in mining. The iron furnaces in and near Chattanooga, Tenn., supply the principal market for the coke.

There are only two coking establishments in the State, one of which, that of the Durham Coal and Coke Company, was operated during 1908. The statistics of production at this establishment, as reported to the United States Geological Survey, show the effect of the general depression in the iron trade, the production decreasing from 74,934 short tons, valued at \$315,371, in 1907, to 39,422 short tons, valued at \$137,524, in 1908, a decrease of 47.39 per cent in quantity and of 56.39 per cent in value. The average price per ton increased from \$3.95 in 1906 to \$4.21 in 1907, but declined to \$3.72 in 1908. All of the coal used in coking was washed before being charged into the ovens.

WILL BUILD COKE OVENS AT GARY, INDIANA

The United States Steel Company, which controls the Joliet Steel mills and which has invested millions of dollars on its plant at Gary, is about to expend nearly \$10,000,000 in the construction of a coke-making plant at the Indiana city. Plans for the great improvement are being mapped out and it is stated that the work on the construction will be begun before the cold weather sets in.

The great success in the coke making at the new Joliet plant prompted the officials of the corporation to decide on building the ovens at Gary. The new works will contain eight batteries of seventy ovens each and when completed will be the largest plant of its kind in the world.

With the announcement of the contemplated construction of the new ovens, word, also, was received today that George C. Lowell, engineer and superintendent of the Joliet Coke Ovens, will be placed in charge of the Gary plant and that Assistant Superintendent Salt will be made the chief at the local ovens.

"The contemplated construction will be the greatest ever attempted by the corporation," said one of the officials of the company. "The new plant will be twice the size of the Joliet works and when put into operation it will give employment to more than five hundred men. The plant will consist of eight batteries and the output of coke a day will run into the thousands of tons.

"The ovens in this city proved a greater success than was ever dreamed of by the officials of the company and as a result it was decided to construct the plant at Gary. The company owns coal mines in various parts of the country and with this it can manufacture the coke and whatever it does not use itself can dispose of at a great profit.

"The plans for the new ovens are being mapped out by Mr. Lowell, and as far as has been determined the plant will be constructed about a mile east of the works at Gary."

Not only is the United Steel Corporation contemplating making great improvements at Gary, but in addition it is stated on good authority that it is about to spend a great amount of money in making repairs of the blast furnaces here. It is also reported that the company is planning the construction of an additional furnace.

COL. W. P. REND'S FINE NEW COLLIERY.

The Herrin, Ill., News says that "Rendville, the site of Col. W. P. Rend's new, large colliery, is going to be a busy place about the first of August. At no mine in this vicinity has such extensive improvements been made this summer as here. The new tippie is about completed. It is the finest in this end of the state, one hundred feet high, and from the top of it a great panoramic view of the mining field is commanded. Herrin, Clifford and Zeigler are easily seen. The tippie cost \$85,000. It is expected that the mine will begin hoisting coal about the first of August. The capacity now is about 1,000 tons a day."

WISCONSIN LABOR FEDERATION'S WANTS.

The Wisconsin State Federation of Labor in session at Eau Claire last week adopted resolutions opposing prohibition because "We do not want to deny ourselves the few luxuries our capitalistic system has left us"; demanding exclusion of Korean, Japanese and Hindu labor; demanding that all judges be elected by the people and none for a longer term than four years; advocating closer industrial organization instead of trade autonomy; demanding the abolition of all indirect taxes and demanding the graduated

income and graduated inheritance taxes; calling for legislation for better tenement houses and asking the Wisconsin legislature to establish sanitariums, colonies and other open-air institutions for free treatment of tuberculosis; urging adoption of a universal label; urging working women to organize; asking the next Wisconsin legislature to compel every employer to grant employees a rest of at least thirty-six consecutive hours every week; demanding enforcement of child labor laws; favoring parcels post. The move to amend the constitution by inserting the words "class struggle," was defeated because it was claimed it would pledge the federation to support the Social Democratic party.

HIGH TAX STARVES THE POOR.

Driven to starvation by a sudden rise in the price of charcoal, the negro washerwomen of Montgomery, Ala., appealed to the mayor asking that he do something to help them. To make up the loss of revenue because of the prohibition law the city put a tax on nearly every business. A license to sell charcoal now costs \$10. The charcoal dealers promptly doubled the price of the commodity which the poor washerwomen must have. They in turn tried to raise the price of the week's wash, but the housewives would have none of it. So the old women and the young ones, picturesquely clad, went to the mayor and told him their troubles. The old spokeswoman told him they would all pray for him, that their prayers were all they could give him. The mayor could offer no encouragement.

COAL PROPERTIES SOLD.

The report of Edward Daniels, master in chancery at Indianapolis, in the Southern Indiana Coal Company and the Indiana Southern Coal Company receivership suits, on the sale of the properties of the two corporations, was filed recently with the clerk of the Federal Court. The Indiana Southern Company's property was sold for \$1,500,000, and the Southern Indiana for \$1,000,000, the Alliance Coal Company purchasing both. With the report of the sale was filed also the report of John K. Seifert, receiver for both companies. The two companies filed their consent to the confirmation of the sale, and the Alliance Company filed a petition asking the court to confirm the action of the master.

CONTRACTS FOR KENTUCKY COAL.

The West Kentucky Coal Company has closed a contract to deliver 600,000 tons of coal at New Orleans for steamships. The period of the contract is three years and the company will commence making deliveries at once. When the barge building plant was established here it was for the purpose of constructing barges principally for the New Orleans trade, the company now being a direct competitor of the Pittsburg Coal Company. The company expects to do an immense business at New Orleans and the barge building plant will be worked to its fullest capacity. The company's mines are located at Caseyville, Ky.; the coal is towed and the tows made up.

NEW OHIO COAL FIELD OPENED.

Nearly 50,000 acres of coal lands in the vicinity of West Point, O., have at last been opened after seven years' preliminary work, and the first shipment has been received here over the Youngstown and Ohio River Road. The development of this field was not made possible until the completion of the construction of the new railroad. An immense tonnage will be sold here during the year to local manufacturing plants, and this will curtail shipments of coal from the western Pennsylvania fields into this section of the Ohio Valley.

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Polonius' Advice to His Son.

SHAKESPEARE. HAMLET, I. 3.

And these few precepts in thy memory
See thou character. Give thy thoughts no tongue,
Nor any unproportioned thought his act.
Be thou familiar, but by no means vulgar.
The friends thou hast, and their adoption tried,
Grapple them to thy soul with hoops of steel;
But do not dull thy palm with entertainment
Of each new-hatched, unfledged comrade. Beware
Of entrance to a quarrel; but, being in,
Bear it that the opposed may beware of thee.
Give every man thine ear, but few thy voice;
Take each man's censure, but reserve thy judgment.
Costly thy habit as thy purse can buy,
But not expressed in fancy; rich, not gaudy;
For the apparel oft proclaims the man.
Neither a borrower nor a lender be;
For loan oft loses both itself and friend,
And borrowing dulls the edge of husbandry.
This above all: To thine own self be true;
And it must follow, as the night the day,
Thou canst not then be false to any man.
Farewell! my blessing season this in thee!

Two dollars isn't much, but it will bring you FUEL for a whole year now.

"THE RESTRAINT OF TRADE."

One of the most important points made in the statement of G. W. Traer before the Interstate Commerce Commissioners during the recent hearing in Chicago was that in which he emphasized the fact that proper regulation of the relations of the railroads to the coal mining industry would not alone serve to correct the troubles now afflicting the coal trade. It is not anywhere denied that the proper supervision and regulation of railroads is one means, and that this will ultimately benefit both the railroads and the coal industry. But regulation of the railroads is not the solution of all the problem. Far less is drastic restriction going to accomplish good. The real trouble lies in the too drastic laws that have already been enacted, laws preventing any regulation whatever, tending, however slightly, to restraint of trade. It is this that must be corrected if the coal industry is ever again to prosper.

Under the English common law, upon which our own common law is founded, it is the "unreasonable" restraint of trade that is prohibited, thus conceding that there may be *reasonable* restraint of trade—legitimate for the protection of an industry. The Federal statute as it was enacted omitted this word "unreasonable," and so brought all action in restraint of trade, whether reasonable or unreasonable, under the ban. The Illinois statute as construed by its Supreme Court, is even worse,—being, perhaps, the most drastic legislation on the subject that appears on the statute books of any state. Under it, even the discussion of a minimum price, whether adopted or not, by two men in the same line of business, would apparently be a violation of the law and punishable by severe penalties. This is all wrong. The common law is safer, saner, and more of a protection to the masses of the people who buy. If in the sale of the coal a number of operators had the right to act in concert, within certain reasonable limits not injurious to the public or tending to create any monopoly, the result would be more nearly equal than is the result of the present law—which imposes unrestricted competition. Domestic coal, coal sold to the average consumer, is but a small part of the total output. The coal used by railroads and other large corporations is by far the greater part of the coal produced in the West. The mines are under heavy expense whether they are in operation or not, whether they are selling their coal or not. In order that they may meet this expense, in order that there may be money to pay the men in the mines, in order that there may be money for insurance, taxes, to meet the expense of maintenance and offset the loss by depreciation, there is fierce rivalry for these large contracts, often at a losing rate. The operator hopes, often against hope, that he may secure enough outside orders to recoup him for his absence of profit in the larger contracts. But this recouping can only be done by transferring to the unprofitable account the profits the coal operator should have on these outside orders, and consequently depriving himself of returns on his business to which he is legitimately entitled. The small consumer does not buy coal at too high a price; it is the large consumer that is forced to pay too

little. And the large consumer realizes this as well as anybody concerned.

The operator is not to be blamed for this situation. He can not help himself, and under the law dare not do otherwise. He would gladly correct it if he could. The railroads and the other large consumers cannot be blamed for having taken advantage of such a situation; not only because it is human nature, and entirely justifiable to buy for as low a price as possible, but because the low price is literally forced upon them—if any did not do it, they would be losers as long as their competitors did it. Self-preservation forces each large user to secure as nearly as possible the same prices and the same treatment as his rivals. No restrictive legislation can amend the situation. There must first be a statutory recognition of and return to the common law stipulation which prevents "unreasonable" restraint of trade, without prohibiting reasonable restraint. Continental Europe recognizes the right of reasonable restraint, the German government directing the operation or non-operation of the coal mines according to the demand. In his recent interview quoted in FUEL President Thomas L. Lewis of the United Mine Workers recognizes it, when he advocates an organization of the coal operators of the country. Yet no such organization is possible under the present Federal and state statutes. If it were, coal would cost the average consumer no more, and yet the industry would be stable and on a better basis in a business sense.

It is safe to assume, the facts being so potent, that the members of the Interstate Commerce Commission who recently conducted the investigation referred to were convinced of these facts, but whether they will deem it wise to so state in their report is, of course, not known. Popular outcry against wrongs, including imaginary wrongs, has become so fashionable that it requires a great deal of consideration before a public body or commission undertakes to stem the current, or to run counter to that outcry. Yet here is a case involving simple justice and the welfare of the country's greatest mineral industry; a case where the well-being of the people and the proper conservation of a great interest is at stake. It is time for advanced action, action such as the report of the Interstate Commerce Commission would pave the way for, and might go far towards accomplishing. Such action was advocated by President Roosevelt and it is hoped would coincide with the views of the present President. It is a subject too large to be dismissed without action, a problem demanding solution.

The Chicago judge who decided that a coat of bronze paint and a girdle was not an indecent costume doubtless had considered the possible general condition that might prevail when the cotton cloth makers get the tariff as high as they wish it. Even the girdle might become a luxury to the poor.

The demand for copies of FUEL containing James Taylor's admirable article on the explosive tests at Pittsburg has been such as to call for the second printing of the article. It is therefore reproduced in this issue and requests for it can be temporarily supplied.

OHIO COAL OPERATORS AROUSED.

A recent letter sent out by an Ohio coal operator has aroused much comment, and, it is believed, precedes a general meeting of the Ohio coal operators for a full discussion of the matters mentioned in the letter. A majority of the Ohio operators are agreed that it is a true view of the coal situation in that State. The letter refers to the gradual absorption of their markets by the West Virginia coal, the mines of that State employing non-union labor and producing coal at a price impossible in Ohio. It is said that in the last few years West Virginia has taken a good share of the lake trade from Ohio and has also made deep inroads on the domestic trade of Ohio.

The letter claims that the natural market of West Virginia is East, but that all the surplus left after supplying that trade is brought into competition with Ohio coal, leaving Ohio no market to replace that lost. The unfavorable elements producing this situation are named as freight rates discriminating in favor of West Virginia and the larger cost of production with union labor. The question of rates is now up with the railroad commission, but the question of labor seems less sure of adjustment. The miners claim that the whole trouble lies in the discrimination in rates. The West Virginia mines produce run-of-mine coal at a cost of from 30 to 40 cents a ton of 2,240 pounds. The average price paid in that State in 1908 was 46 cents a gross ton for run-of-mine, and the average cost of production is about 50 per cent of what it costs the Ohio coal operator. Added to this, their labor works ten hours as against eight hours in Ohio mines.

The writer takes the ground that when the present agreement with the miners expires April 1, 1910, the miners should be ready to meet the operators with the view of putting them on a basis just and equitable as compared with the West Virginia operators. The loss of her legitimate markets has been a costly thing to the Ohio coal industry, and the operator writing the letter insists that unless something be done in that direction the State will be surely brought to the condition of having to depend on the domestic market alone for business. While the chances are that that is an extreme view, yet the facts are serious enough to demand attention and remedial measures. Not only Ohio suffers from the non-union product of West Virginia; other States are up against the same proposition. A coal mine operated under union conditions and at union wages can not compete with a coal mine subject to none of these conditions, and the action of the Ohio operators will be watched with interest. If they can solve the problem confronting them, or suggest the means of doing so, it will not only advance their own interests but will be of benefit to all coal producing States.

The wise machinery man, the well informed company dealing in mining supplies, is now looking about for the business that is sure to come with the rehabilitation of the Illinois coal mines. It is bound to come soon, and the people who have put themselves in touch with the operators are going to get the business.

THE PITTSBURG COAL STRIKE.

A wholesome provision in the agreements made with the coal miners by the coal operators' association is that by which so-called sympathetic strikes are forbidden. In actual defiance of this provision, and yet under color of alleged abuses District President Francis Feehan of the Pittsburgh district called out 18,000 coal miners employed by the Pittsburgh Coal Company. The real reason is alleged to have been to deprive the United States Steel corporation of the coal furnished under contract by the Pittsburgh Coal Company—contracts amounting to eight million tons a year. The steel company is engaged in a fight with its workers in the tin-plate department, and by depriving them of coal the purpose was to aid the strikers under an alleged claim of violations of the agreement by the coal company. In a conference with the miners' officials President M. H. Taylor of the coal company assured Mr. Feehan that if he could point out a single specific instance of where the coal company had violated the scale agreement it would at once be rectified.

The strike had been called over the protest of National President Lewis who appealed to each local in the Pittsburgh district not to violate the provisions of the international constitution relating to strikes. He informed them that the proposed strike had not received his sanction nor the endorsement of the international board. The United Mine Workers, he said, should not jeopardize its existence, but for the sake of its good name and their own should regard their contract with the coal company as sacred. Despite this appeal the strike was called, and on the 15th of the month 15,000 of the 18,000 miners involved quit work.

Following the conference with the officers of the coal company, however, the executive board called off the strike after one day, adopting the following resolutions, containing a slap at the National President:

Whereas, International President Lewis has advised the miners who were recently called on to strike to disregard the orders of the district officials and remain at work; and

Whereas, This uncalled for interference on the part of our international president with a strike against a coal company that is grossly violating our agreement * * * has caused confusion and dissatisfaction to exist in our ranks, and made it impossible to have the harmony and co-operation which are so necessary for the success of our efforts, therefore be it

Resolved, That we call off the strike now in effect at the mines of the Pittsburgh Coal Company and continue negotiations for the adjustment of our grievances and again request President Lewis to come here and assist us to adjust the grievances that caused the recent strike and give the miners the assistance he assures them in the circular he issued July 13.

There were 46 mines involved in the strike order, and 30 of them stopped work while 16 continued at work under the directions contained in President Lewis' circular letter.

This spirit of insubordination has been the hardest thing that President Lewis has had to overcome during his term

of office, and it is really a source of regret to all who have in mind the true interests of the organized miners. The greatest need of the organization at present is a spirit of strict compliance with their contracts, because another need is the extending of the union into unorganized fields so that union producers may not be penalized by reason of dealings with the union. But such action as that attempted in the Pittsburgh district can make no friends in the ranks of coal operators in unorganized fields. The next year may have troubles enough in store for the friends of organized labor without any inconsiderate members going on a hunt for more troubles.

A great many, unfortunately, will jump to the conclusion of the Buffalo, N. Y., Express, that "the trouble appears to be with the union itself. If there can be no better discipline within the organization; if a district president and the executive committee cannot be made to live up to the regulations of the union, how can the leaders expect ever to induce an unprejudiced body of men to oblige employers to do business with the union as such?"

The loss of revenue in Alabama since prohibition was adopted has been so serious as to cripple the public schools of the State. The cities are levying privilege taxes on all lines of business in order to raise money to pay running expenses. In Montgomery, where laundresses use charcoal altogether, a privilege tax was placed on all charcoal peddlers; they in turn raised the price of charcoal so as to increase the cost of laundry work. When the laundresses tried to charge more for their work, the women refused to pay more, leaving many of the Negro women who depend on such work to face deprivation and in some cases want of food. Yet, no doubt, these very women who refuse to pay the price paraded the streets and sang songs in the prohibition campaign. If people desire fancy kinks in government they should at least be willing to pay the price, and not place the burden on those least able to afford it. What the laundry women should have is a union.

If you do not endorse all the views expressed in FUEL by various contributors, let us have your own views of the matter and we will also print them. FUEL's columns are open to all who have views and are willing to express them. The larger the number of contributors, and the more divergent the views expressed, the more interesting its columns will be. Don't be backward; we will be glad to hear from you, in particular.

More drunks on Sunday than in the old days are reported from Tennessee cities since prohibition became effective.

FINED FOR EJECTING MINERS.

Before Justice Atkinson, in Charleston, W. Va., seven detectives employed by coal companies on Cabin Creek were convicted of illegally ejecting miners in four cases, and were each fined \$100. Appeals were taken in each case. Warrants have been asked for against detectives in eleven other cases.

OXYGEN IN COAL AN INJURIOUS IMPURITY

Recent investigations by the United States Geological Survey have shown that oxygen, so essential to all life, forms in coal an impurity that is almost as injurious as the ash content. The subject is, of course, of great importance to the consumer, whether he be a manufacturer using hundreds of tons or a householder who has to supply only a furnace.

David White, an account of whose investigations on the subject has just been published by the Geological Survey as Bulletin 382, was led to these conclusions in the course of work undertaken in an attempt to devise an acceptable classification of the many different sorts of coals. He states that oxygen and ash are of very nearly equal negative value, ash being probably a little more injurious in most coals; and that the calorific value of coals in general is indicated by the balance between the total carbon on the one hand and the sum of the two great impurities, oxygen and ash, on the other. The practical application of these statements appears in considering the effect of the exposure of coal to the weather. The weathering of the lower grades, especially lignites, bituminous coals, and peats, is marked by the accession of oxygen, which is taken into combination. This increase of the oxygen content permits a calorific deficiency which, on account of the high anticalorific value of oxygen, is often serious. It is possible that in many cases considerable increase of oxygen and consequent loss of efficiency are suffered by the lower-class fuels between removal from the bed and consumption; and it is probable that in the sub-bituminous coals, and more especially in the lignites, oxygenation begins immediately after the coal is blasted from the face in the mine.

A comparison of the calorific values of the car and mine samples seems to warrant the apprehension that in some cases at least considerable deterioration occurs. The amount of loss depends not only on the kind of coal, but also on the conditions of loading, the kind of car, the size of the fragments, the weather, and the period of transit, which for many coals is over three weeks.

A SHORT-LIVED STRIKE.

One hundred miners employed by the Merchants' Coal Company at Boswell, Pa., struck, claiming that they mined more coal than they received credit for. After a few days it was announced by the mine officials that if the miners did not return to work within two days the mines would be permanently closed. The miners held a meeting in the woods near Boswell and unanimously agreed to return to work. Work is very scarce at this season of the year and as the great majority of the strikers are married men they could not afford to lose their income. The officials of the company blame labor organizers, several of whom have been in Somerset County recently.

BROKER EARNED HIS COMMISSION.

D. O. Mills, of San Francisco, beat the Black Diamond Coal Mining Company of Washington out of \$400,000 by butting in when Broker Eugene F. Lawson had a sale of the property made for \$1,500,000, according to a decision of all nine members of the State Supreme Court, affirming judgment in favor of Lawson for a \$66,935 commission.

Lawson had the sale made when Mills leaked the information the company, of which he was a stockholder, would

sell cheaper, and the Coast Company, dealing direct, got the property for \$1,100,000.

The decision also finds that in an attempt to defeat the commission, the records of the company were doctored by red ink erasures of the record of a resolution, and the writing in of a different resolution, which was never adopted.

ORDERS 900 COAL MINE CARS.

Contracts have been made by the Pittsburg-Buffalo Coal Company for 900 new four ton mine cars, the largest made, the order being parcelled as follows: Youngstown Car Company, 10 cars; Standard Car Manufacturing Company, 500 cars; Connellsville Manufacturing Company, 100 cars; Ohio Ceramic Company, Cleveland, 100 cars, and Arthur Koppel Company, Pittsburg, 100 cars. The 100 car order to the Arthur Koppel Company makes 700 cars that will be made by the concern, orders having been placed for 600 previously. All will be used in the Marianna mine, in Washington county, Pa.

COLORADO COAL FOR OMAHA.

Anthracite coal for Omaha consumption at less than \$8 a ton, and the product equal to the best Pennsylvania hard coal, is promised by W. F. Jones, general traffic manager of the Moffat road, who is in Omaha to arrange a freight agreement with the Nebraska roads. "Our line in Colorado has opened up a vast deposit of superior anthracite," says Mr. Jones, "and we can lay it down in Omaha at several dollars less than the eastern mines. We also have opened several miles of bituminous coal, which will compete with the best domestic grades now supplied Nebraska consumers."

MINERS WILL MAINTAIN THEIR STAND.

Patrick Gilday, president of District No. 2 of the United Mine Workers of America, said at Philadelphia that the board will not recede from its position taken a month ago when it refused to accept the proposition offered by the bituminous coal operators in central Pennsylvania for a reduction of eleven cents a ton which the miners have been asked to accept. The conferences being held at Philadelphia between the operators and miners have proved fruitless and a total shutdown of the soft coal mines in central Pennsylvania is threatened.

EIGHT FEET OF COAL IN TEXAS.

That there is an eight-foot vein of coal twenty miles north of Jefferson, near Kildare, Texas, is corroborated by a prominent geologist and mining expert, who has seen the outward formations sufficient to base his assertion, and he further attests that it is a grade of coal that will make the best coke mined or manufactured. He is smitten with the possibilities of Jefferson and Marion County.

INVENTS A TIME-SAVING FUEL.

Thomas D. Bausher, of Reading, Pa., has invented a new fuel with a cupful of which, costing just one cent, he can make two cups of coffee and fry a slice of ham within seven minutes; and in less than five minutes he can start a coal fire with the same amount of the new fuel, without the aid of a particle of wood.

HEAVY SALES OF COAL BONDS.

It is understood that the Fidelity Trust Company, manager of the syndicate which bought from the Consolidation Coal Company \$3,000,000 of first mortgage 5 per cent bonds, has sold more than \$2,300,000 of the issue, including the \$1,500,000 placed abroad through Hiddendorf, Williams & Co.

FACTORS THAT REDUCED ARKANSAS COAL PRODUCTION

The total production of coal in Arkansas in 1908, as reported to E. W. Parker, of the United States Geological Survey, was 2,078,357 short tons, having a spot value of \$3,499,470. The coal industry of Arkansas suffered more from the untoward conditions which existed during 1908 than that of any other state of the southwestern region, the production showing a decrease from 2,670,438 short tons in 1907 to 2,078,357 tons in 1908, or 22.17 per cent, as compared with 14.7 per cent decrease in Kansas, 17 per in Missouri, and 19 per cent in Oklahoma. The value of the Arkansas output declined from \$4,473,693 to \$3,499,470, a loss of \$974,223, or 31.78 per cent.

The factors which contributed to the decreased production were (1) the financial depression, (2) the exceptionally warm weather during the winter months, (3) labor disaffections, and (4) increased production and consumption of petroleum and natural gas in the Texas, Louisiana, and Mid-Continent fields. The last factor was probably as influential as all the others put together. The labor disaffection was the usual biennial suspension of operations on April 1, pending the settlement of the wage scale. About four-fifths of the men employed in the coal mines of the state went on strike and the total number of days lost was 387,841, or almost exactly half of the total time made. Because of the slight demand and also because the large consumers, in anticipation of a suspension, had well stocked with coal, the strike did not have so great an effect upon the production as might be supposed.

During 1908 the 5,337 men employed in the coal mines of Arkansas averaged 145 working days. In 1907 the 5,085 men employed worked an average of 190 days. The average production per man for each working day in 1908 was 2.68 short tons, and the average production per man for the year was 389 tons. In 1907 the average production per man was 2.76 short tons, and for the year 525 tons. Since the coal miners of Arkansas have been unionized practically all the coal mines of the state have been operated on the basis of an eight-hour day.

No machines have been in use during the last six years. The single coal washer in the state washed 57,450 short tons of coal in 1908, which yielded 43,670 tons of cleaned coal and 13,708 tons of refuse.

R. A. Young, the state mine inspector, reports that during the year 14 men were killed, 17 were seriously injured, and 26 suffered minor injuries in the coal mines.

The total original supply of coal in Arkansas is estimated by M. R. Campbell, of the United States Geological Survey, at 1,887,000,000 short tons, of which 1,707,000,000 were bituminous and semi-anthracite and 90,000,000 tons were lignite. The lignite areas have not been developed. From the bituminous and semi-anthracite areas there has been mined, to the close of 1908, a total of 25,834,758 short tons, representing an exhaustion, including waste, of approximately 39,000,000 tons, or a little more than 2 per cent of the estimated original contents of the Arkansas fields. Of the total amount of coal produced in Arkansas from the time when mining began, 8 per cent was mined in 1908.

REORGANIZATION OF BON AIR COMPANY.

The Nashville, Tenn., Banner says: If current rumor in financial circles is to be relied upon the reorganization of the Bon Air Coal, Iron & Railroad Company and the injection of something like \$2,000,000 or \$3,000,000 new Eastern capital into several improvements is contemplated

within the next few months. President Williams when seen today stated that while some talk had been indulged by officers of the company, nothing had been put up to the stockholders or directors and he had nothing to give out. It is stated, however, that Jesse M. Overton, Vice-President of the company, is in New York and his visit ostensibly is to interest Eastern capitalists in the improvements contemplated and that several millions are ready to be put into the project. The improvements contemplated, according to those who profess to know something of the project, embody the erection of several new furnaces and the sinking of more shafts with a general enlargement of the facilities on the property. It is also tipped off that something along these lines will be submitted to the stockholders within a short time and that it will make for a general advance in values all along the line.

DEATH OF JOHN BEAGHAN.

John Beaghan, president of the Cantrall Coal Company, died in Springfield, Ill., from injuries sustained in an accident on June 23, in the sump of the Republic mine, north of the city. Although he lived about three weeks, from the first it was not thought that he could survive the injuries sustained. Mr. Beaghan, in company with a number of other men employed at the mine, descended in the cage for the purpose of making a tour of inspection. When the cage reached the bottom, the employs left. Mr. Beaghan, not thinking it necessary to give the engineer orders to lower the cage, he went into the sump of the mine. It was while working here that the engineer lowered the cage, catching Mr. Beaghan underneath, crushing him. His back was broken, his head was lacerated and besides he suffered internal injuries. He came from County Durham, England, thirty years ago, and was in his 56th year. A wife and eight children survive him.

STEAM TO REPLACE WIND.

The announcement that the Coastwise Transportation Company of New York, which operates a fleet of schooners in the coal trade out of Baltimore, has contracted for the construction of two steam colliers of 8,000 tons each, and costing about \$1,000,000, marks a long step in the decadence of the American schooner as a coal carrier. While other companies have for several years been showing a preference for steam over sail, the Coastwise Transportation Company held out resolutely for the sailing vessel. The fact that the company has placed orders for steam colliers, however, is regarded in shipping circles as significant that the day of the schooner is past. The new colliers are to be of the same type as the Malden, Melrose and Everett, now trading out of the port of Baltimore, and are to be completed in about a year. They will operate between Philadelphia and Boston.

BIG COAL LAND DEAL CLOSED.

The largest individual coal land deal that has been made in southern West Virginia in a number of years was closed recently by J. L. Caldwell of Huntington, W. Va., president of the Dingess Run Coal Company, when he took over a 3,000 acre tract of land, rich in coal deposits, from Crawford, Ashbury and other Charleston capitalists, paying \$60,000 cash.

This tract lies on the dividing ridge between the Coal and Guyan rivers in Logan county and is numbered among the best coal territory leases in the state.

The Kingdom of Egypt began under Misraim, son of Ham, second son of Noah, 2188 B. C.

MINE VENTILATION

Extracts From a Paper Read Before the Y. M. C. A. Mining Institute, Somerset, Pa., by C. W. HOFFA, Pine Hill, Pa.

There are many reasons for ventilating mines, among them: To render harmless, by intermixing pure air, all noxious gases; for breathing, both for animals and men; it is also necessary to feed the flames of lamps, etc. There are several methods of producing it:

By furnace.—A furnace is generally placed some distance back from the bottom of the up-cast shaft, and a stone drift is driven into the shaft a certain distance up from the bottom. The principle of the furnace is this: Suppose two shafts be sunk, and an airway be made between the two; the weight of air in the two shafts is then equal. Apply a furnace at the bottom of one, and this will rarify the air in that shaft and make it lighter than that in the other; consequently, a current of air is formed by the lighter air giving way to the heavier.

Mechanical ventilation, or fans.—There are different makes and descriptions of fans at work in this country. The principle of most ventilators is that of exhaustion. The fan consists of a hollow-drum placed over the mouth of the up-cast shaft, and a revolving motion is given to it by a steam engine or electric motor; the exhaustion caused by the continual rotation of the fan produces a current of air from the downcast toward the upcast.

Natural ventilation.—A natural circulation of air through a mine is established when we have two shafts of unequal depth. The direction of the current of air is caused by the difference of density in the two shafts. In winter the direction is down the shallow shaft toward the deeper one, and in warm weather the contrary.

To draw a fixed line as to how much air should be circulating in a mine is unnecessary, but as to the minimum, I might say not less than 100 cubic feet per minute for every person, and 200 cubic feet per minute for every animal in a mine not generating any great quantity of noxious gases. In fiery mines the quantity should be doubled.

In all cases make both intakes and returns as large as possible for this reason: The same power which produces a certain quantity of air in a large airway will not produce the same quantity in a small one, because part of that power is employed in overcoming the friction of the air against the roof, sides and floor.

The power of pressure required to overcome the friction of air increases and decreases in the same proportion as the area of the airway exposed to the air increases or decreases. When the velocity of the air, and the area of the airway, remains the same, the power required to overcome the friction is proportioned to the area of rubbing surface; consequently, if we double the extent of rubbing surface we also double the friction, and, the power of pressure required to overcome it must be increased.

If there were two airways, one just twice the area of the other, velocity of air and extent of rubbing surface being the same in each—twice the power must be applied to each square foot of the small one that is required by the large one to overcome the equal amount of friction in the two airways, the quantity of air passing in the small one being half that of the large one.

By splitting the air you will add greatly to its quantity by reducing the velocity. We should greatly lessen the friction, in comparison with the quantity of air circulating, and so obtain an increased quantity with the same ventilat-

ing pressure. Splitting the air has many advantages. It increases the quantity, gives more fresh air to each flat or district, does not carry any noxious gases from one district to another, and does away with the doors in the hauling-ways. The air in the main intake should travel at from 3 to 6 lineal feet per second; 5 is a good sweeping current. For carrying the air up into the face, brattice-cloth is used; stoppings are also put in the cross-cuts between the heading and the back-heading to keep the air on its course direct to the face of workings.

There are two methods of measuring the quantity of air circulating in a mine—first, by an anemometer. The method of using it is to hold it in the airway for, say, one minute, and note the number of revolutions it makes by reading from the dial. Supposing it denotes 500 revolutions, a certain number is generally added to make up for friction, 40; then the number of revolutions, 540 times the area of the airway—suppose it be 42—equals the quantity of air circulating, 22,680 cubic feet per minute.

Another method is by powder smoke. Select a part of the main intake or return, as the case may be, where it is of a uniform section; measure off, say, 100 feet, and then ascertain the cubical contents. If the airway is six feet high by eight feet wide, the cubical contents will be six feet times 100 feet, or 4,800 cubic feet. Let off a small quantity of gunpowder at the windward-end, and note the time it requires to travel the distance of 100 feet. Supposing it to be six seconds, then the quantity of air traveling can be found as follows: As the time in passing: cubical area one minute: quantity of air circulating, 6:4,800::6:0:48,000 cubic feet per minute.

No miner can be too much impressed with a sense of the great importance of good ventilation. When men work in the open air the carbonic acid formed is speedily dispersed, and as the supply of pure air is abundant no ill effects follow; but in rooms, and especially in mines, the air soon becomes unfit for use if it be not constantly renewed.

Long-wall working is the easiest system to ventilate, as the air has a continuous circuit around the working places, which is the shortest course, and less friction than any other system used to ventilate a mine of the same capacity. In working on room-and-pillar system, I use the shortest method to carry the air, which is to cut all rooms through to the next heading districts.

When we have an explosion by using this method we find less damage done, as the force of explosion will not be as great, for the reason that it will have a greater space for expansion than if confined to a long, narrow air-course.

ANTHRACITE TONNAGE FOR JUNE.

Anthracite coal tonnage for June showed a decrease of 799,994 tons as compared with July, 1908, the total tonnage for the month having amounted to 4,904,858 tons. For the first half of the year the tonnage was 31,951,730, a decrease of 716,912 tons. The Delaware and Hudson was the only road of the eight reporting to show increased tonnage for the month, its gain being 38,526 tons. The Lehigh Valley showed the greatest loss, with a reduction of 221,302 tons. Reading, Delaware and Hudson and Erie had increases for the first six months as a whole, the Erie, with 292,693 tons gain, making the best showing.

A MODERN MINE WITH UNIQUE FEATURES

Coal Valley Mining Company's New Plant Built in Four Months, Embodies Every Improvement Looking to Economical Development and Operation, and Presents Many Points of Interest to Operators of Coal Mines.

The keen competition in the coal mining business requires the strictest economy in the development and operation of mines. It is no simple matter to correctly decide upon the plant which will give the best results. No fixed standard can be adopted, because every field requires special treatment. The markets available and the character of coal produced call for surface plants of different types; the underground development varies with the thickness of the vein, the depth below the surface, and the roof and bottom conditions.

The cuts herewith, reproduced from photographs taken while the work was being done, show the progress in the development of the surface plant of Shaft No. 3 of the Coal Valley Mining Company, located three miles south of Preemption, Ill. A description of the plant, which is somewhat unique, will be of interest.

Shaft No. 3 is to work out one of the few parcels of No. 1 coal remaining in that section of the state, the available area of coal being about 500 acres. The vein is from 3 ft. 6 in. to 4 ft. 4 in. thick, and lies 65 feet below the surface at the location of the shaft. The roof and floor of the vein are

50 ft. centers. This construction not only affords the advantage of great strength, but puts the weight a considerable distance from the shaft. In the case of fire in the shaft, the tippie would not be affected, and repairs to the cribbing could be made without danger to the tippie.



Temporary Shaft-Sinking Plant, April 1, 1909.

The hoisting engine is located parallel to the tracks, commonly known as "an end pull." The tippie is of sufficient height for a four track shaker screen plant, though in its present location a bar screen is used. The cars are hoisted in self-dumping cages and dumped into a weigh-hopper; the coal thence passes over a 5 inch bar screen, delivering the coarse lump coal on a curved end loading chute. The egg coal, passing between the 5 inch bars, passes over a 1¼ inch bar screen, and the screenings, passing through the 1¼ inch bars, are either loaded directly into the car, or elevated by a continuous bucket elevator to the top of a steel bin, where a rotary screen is located, having a ¾ inch mesh. The slack track is located in the first panel north of the shaft, and the total width from the center of the shaft to the center of the outside loading track is 44 feet, making a very compact plant. The steel bin is located over the slack track, and like the tippie is bolted, so that it can be readily taken down and removed.



Site of the Shaft March 1, 1909; Banners Show the Corners of the Shaft.

hard slate, and it is intended to work out all of the coal, as has been done in the Sherrard mine of the same company, where an extraction of over 95 per cent is obtained. On account of the proximity of this field to the market offered by the tri-cities of Rock Island, Davenport and Moline and the great quantities of coal consumed by the various Rock Island lines diverging from this point, the preparation of coal must be such as to meet this particular demand in the most advantageous manner.

Work at the plant was started on March 24th, and it will be entirely completed by the end of July. The shaft is 9x14 feet in the clear, and has two hoisting compartments. A clearance of 9 inches between the cages and shaft lining was provided to prevent interference with ice, and permit repairs to shaft lining. No men will be hoisted on the cages, a slope being provided for the traveling-way. This arrangement affords economy in hoisting engineers.

The surface plant consists of a gravity yard, having a capacity of 50 loads and 50 empties on three loading tracks, and scales on both ends to weigh empties and loads. The tippie and screen structures are of steel. The tippie is of the "A" frame type, and is carried on two concrete walls,



Head Frame Under Construction, June 1, 1909.

It should be stated that inasmuch as the life of this mine is only from 10 to 12 years, all structures were designed with the view of removal to other locations owned by the company. In the case of a wooden structure, at the end of 10 years there would be very little, if any, salvage. It is

believed that this plant will answer any future requirements; besides affording the protection of the steel structure over wood.

The tipple, screen structure and bins were built by the Wisconsin Bridge Company, Cudahy, Wis.; the screening apparatus and machinery by the Link-Belt Company, Chicago. The elevator and rotary screen are driven by a vertical, high speed engine, located on the top of the bin, built by the American Blower Company.

The power plant consists of two 72x18 Ames return tubular boilers, set in a single battery, and equipped with chain grate stokers built by the Illinois Stoker Company, Alton, Ill. One stack, 60 in. x 75 ft. is used.



Surface Plant Completed July 1, 1909, with Temporary Works Not Removed.

The hoisting engine, of the Litchfield make, has 14 x 24 cylinders, geared one to four to a 6½ ft. drum, 24 in. between flanges. The hoisting engineer stands on an iron platform, so that he can oversee not only the cages, but the loading tracks and the boiler room as well. The engine and boiler house is 36 x 58, and built of brick with a steel truss roof. An inclosed conveyor carries the fuel from the fine slack bin directly into the hoppers of the stokers. The coal feeding arrangement is partially automatic.

The self-dumping cages were furnished by the Eagle Iron Works Company, of Terre Haute, Ind., and the mine cars were built by the Fulton Pit Car Company, Canal Fulton, Ohio.

The adoption of a chain grate stoker for a 300 horse power plant may seem somewhat extravagant. In this case, however, it serves the purpose of showing the adaptability of the small size of coal as an economic fuel, and proves the reduction of ash in stoker practice over hand firing. It is also expected to prove the smokeless combustion of Illinois coal by a suitably designed plant. Compared with present plants, the economy effected by the machinery selected, and its location, is such as to pay for the comparative large outlay for such a small plant in a very short time. The fire-proof construction of all buildings effects economy in insurance and insures constant operation.

The use of a slope as a traveling-way, which is, of course, confined to shallow mines, reduces risk to men while entering or leaving the mine, and enables the handling of material without interference with hoisting; the hoisting engineer is only required when actually hoisting coal.

The mine will be developed on the double-entry system, with return air-ways on both sides. Cognizance was taken in the location of the shaft, so as to secure the most favorable grades in the direction of the load. As developments require, a rope haulage plant will be installed, and will eventually reach a small coal area located a mile and a quarter south of the hoisting shaft, on the opposite side of the Edwards river. Inasmuch as the coal crops out above the

river level, the entries will leave the main mine, cross the river, and again enter the mine on the south side.

The entire plant has been erected and the mine developed without as much as a single scratch to any of the employees.

SHEA'S "SERVICES" TO ORGANIZED LABOR.

Cornelius Shea has gotten his deserts in part. He was convicted in New York and sentenced to imprisonment for from five to twenty-five years for his brutal attack on a woman he took to New York from Chicago. Shea directed the big teamsters' strike in Chicago, which cost 19 lives, resulted in injury to 462 and practically paralyzed business for two months. His counsel asked the mercy of the court because of the alleged services he had rendered organized labor. Judge Foster said on this point:

"Your services to humanity are urged here in your behalf because you have been active in the cause of organized labor. I allow no one to surpass me in admiration of the dignity of labor. I believe that it is the right of labor to organize. But there is a prejudice in this community which we must admit exists against organized labor because men such as you dominate it with your brutal methods and conduct and offensive personality until part of the community has come to look upon organized labor as a society of brutes that bring about victories by brute methods. That is all wrong. There is no one more honorable or honest than the average laboring man.

"You gained your ascendancy in the cause of labor by your brutal methods, and your brutal conduct has been abundantly manifested in your private life. I believe that I am helping the cause of organized labor by ridding it of such a person as you and sending you to state prison."

EDUCATION OF INDUSTRIAL CLASSES.

A committee for the investigation of the education of the industrial classes to work in this country and Europe, which was authorized at the last meeting of the American Federation of Labor in Denver, has been publicly announced by Vice President James Duncan of the federation as chairman of the executive board having the selection in charge. The committee, which will report at the next meeting of the federation, is as follows: John Mitchell, chairman, New York; John Golden, Fall River; John Wilson, Cincinnati; Miss Agnes Nestor, Chicago; Mrs. Raymond Robbins, Chicago; John B. Lennon, Bloomington, Ill.; Charles P. Neill, Washington, D. C.; Congressman W. B. Wilson, Washington, D. C.; Frank Duffer, Indianapolis; Hugh Frayne, Scranton, Pa.; T. J. Conlon, Washington, D. C.; C. H. Winslow, Arlington, Mass.; Edward Hirsch, Baltimore, Md.; John Roach, Washington, D. C.; Rev. Charles Stelzle, New York, and Stuart Reid, Washington, D. C.

MINERS WILL MAKE A FIGHT.

The Western Federation of Miners in executive session at Denver, Colo., decided to make a strong stand against employers who have taken advantage of apparent hard times and forced burdensome conditions. Strikes will be called wherever conditions are not improved. The Guggenheim properties will be made the first objects of attack. Working conditions in the smelters are said to be intolerable in most instances. The decision was made after a lengthy discussion on the report of the committee on strikes and lockouts. It is stated that the federation now has \$50,000 in the treasury and will be in fighting trim again when it gathers in the \$60,000 appropriated by the legislature for the destruction of the federation, stores and other property during the Cripple Creek troubles.

ALTERNATING CURRENT FOR COAL CUTTING MACHINES

Although universally recognized as of great importance, the application of electricity in mines has been somewhat retarded because coal-mining machinery could be operated electrically only by direct-current motors. This limitation has prevented the generation and transmission of electricity by the more economical alternating current except when transformed to direct current by a rotary converted near the point of application.

Henceforth the use of electricity in coal mining will be more widespread because of the development of the alternating-current motor. Distant water powers and advantageously located generating stations can now be utilized to a greater extent, for it is no longer necessary to transform the alternating current. This far-reaching development in coal-mining machinery is made possible by the application of an alternating-current motor to the coal puncher. The direct-current machine has already reached a high degree of perfection, and a Syracuse, N. Y., company is equipping their machine with an alternating-current motor of two or three phase, for any voltage or frequency.

This is the first successful application of an alternating-current motor to coal mining machines, and although announcement of this motor has been made quite recently its success is assured, because it is no longer in the experimental stage. It has had a long period of development and successful operation.

Previous attempts to use alternating-current motors for coal-cutting machines of other types have usually failed because of the great weight of the machine and the enormous amount of power required. With the machine in question it is claimed that the principle of operation is so efficient that the power is reduced to one-third that of other coal-cutting machines, thus allowing such a light motor that the complete machine weighs only about 800 pounds. Notwithstanding this great reduction in weight and power input, the machine seems in no way inferior in its capacity for work.

TO ENFORCE ARBITRATION BEYOND COURT'S POWER

The first effort ever made in the United States to stop a strike by enjoining both the principals and the commonwealth failed in Pittsburg, Pa., July 20th, when Judges Marshall and Brown of the Common Pleas court sustained the demurrer of the Pressed Steel Car Company to the petition for injunction made by the Public Defense Association of Pittsburg against the company, the striking employes and the sheriff of Allegheny county.

For the strikers, who admitted the conditions as set forth by the petition and who joined in the demands of the defense association that the court enforce arbitration upon the part of the company's officials, it was argued that it was high time for the courts to intervene.

For the defense association it was argued that the strike is costing the taxpayers much money and much uneasiness.

For the company it was argued that as the petitioners are not injured personally and that as the corporation is not one of public service, but a private corporation, the courts cannot interfere. The formal ruling of the court in refusing the petition of the Public Defense Association in part follows:

"Much as we regret the unfortunate relations between the company and its employes and as much as we would like to see these men re-employed and the strike settled, we find this court has no right to compel the company to re-employ these men or to compel the company to operate its plant again or pay their men more money or to install a new wage system.

We only have jurisdiction in regard to trouble growing immediately out of the strike and any request for a restraining injunction against violence or which may lead to loss of life or damage to property will be considered. We sustain the demurrer of the company in all points except that which concerns the right of a taxpayer to file such a bill."

The decision of the court establishes a precedent and caused a general comment as the opinion handed down is far-reaching in effect. Attorneys commenting upon the action of the court were universal in their opinion that Judges Marshall and Brown were entirely within legal right in their ruling.

PHILIPPINES' COAL FOR AMERICAN SHIPS.

As the result of the success of the coal burning test which the U. S. army transport Dix is making on her present voyage across the Pacific, it is not at all unlikely that the United States government will spend a sum of money that will figure up into the millions in the development of coal mines in the Philippine Islands. For the first time in the history of the transport service on the Pacific ocean, the Dix has not a speck of Japanese coal in her bunkers. She is burning coal from the mines at Bataan, a small island just to the south of Luzon, in the Philippines. It has proved to be a superior article, splendid for steaming, and causing remarkably little smoke. According to the engineers of the Dix, the coal is every bit as good as that which is usually taken on board the transports at Nagasaki.

HIT THE WELCHING INSURANCE COMPANIES

In deciding an action was brought by the Richmond Coal Company, of San Francisco, against the Commercial Union of London on a policy for \$20,000 which had an earthquake clause inserted, Judge Van Fleet held that the company had shown the earthquake to be the approximate cause of the fire. The decision, which was written by Judge Ross, was to the effect that the approximate cause of the fire at the coal company's plant was due to the fire at the drug store where it started, and that the court had no legal right to go any further back. In other words, to use the exact phrasing of the decision, "It cannot go further and inquire into the approximate cause of the approximate cause."

IDAHO'S COAL PRODUCTION.

The report of the United States Geological Survey shows that the production of coal in Idaho in 1908 was 5,429 short tons, having a spot value of \$21,832. There are several restricted and widely separated areas in Idaho in which beds of subbituminous coal and lignite occur, and the coal-mining industry has been confined to comparatively small operations for local consumption. The output in 1908 was 1,079 short tons, or 16.58 per cent less than in 1907, and the value decreased \$4,662, or 17.6 per cent.

WOULD FORM TRI-STATE ASSOCIATION.

At the final session of the convention of the Wholesale and Retail Coal Dealers' Association of Ohio at Toledo. M. J. Hornberger of Youngstown and Harry Heywood of Toledo were appointed a committee to negotiate an amalgamation with the Indiana-Michigan Wholesale and Retail Coal Dealers' Association, which embraces over 1,000 members. It is proposed to effect the consolidation next year.

THE NEW WYOMING AGREEMENT COMPLETED

The Wyoming Coal Operators' Association has completed an agreement with the United Mine Workers of District 22 as to the wages to be paid and rules under which miners will work for the year, beginning September 1, 1909. Contrary to some expectations there was nothing in the meeting which savored of unpleasantness, both sides being agreeable to the adoption of the wage scale and conditions already existing, and which went in force on September first of last year. The agreement reached last year at Cheyenne, Wyo., after all efforts had been exhausted at numerous meetings held in Denver without result, will prevail.

The agreement is a lengthy affair, governing not only general conditions and wages to be paid in the various mines of Wyoming, but making specific conditions for individual mines and companies. The wage scale is based in every instance on an eight-hour day, "exclusive of one-half hour midshift lunch, six days a week when required by the operators, Sundays and legal holidays excluded."

Penalties are provided for the loading of slate, black-jack, sulphur or other impurities with coal, being small fines for the first two offenses and discharge or suspension for subsequent offenses.

Settlement of Troubles.

In case of any local trouble arising in any mine through such failure to agree between such pit-boss or foreman having proper jurisdiction, and any miner or mine laborer, the pit-committee and the pit-boss or foreman are empowered to adjust it, and in case of their disagreement, it shall be referred to the superintendent of the company and the local executive board of the United Mine Workers of America, and should they fail to agree, it shall be referred to the general superintendent of the company and the district president of the United Mine Workers of America for adjustment, and in all cases, the mines, miners, mine laborers and parties involved must continue at work pending investigation and adjustment until a final decision is reached in the manner above set forth.

The operators agree to pay twice a month, on or before the 15th and on or before the last day of the month. In case of injury to miners, the company is required to keep on hand sufficient blankets, oil, bandages, cots, etc., readily available at each mine, to properly care for and convey injured persons to hospitals after such injury. A hospital commission is provided for, and hospitals must be established at each camp for the care of the injured miners.

General provisions are made to cover the working of all mines, a brief transcript of which follows:

The price of powder shall be \$2.50 per keg.

Blacksmithing shall not exceed 50 cents per month for pick mining.

Any class of labor may be paid for hours actually worked, the scale being one-eighth of the scale rate per hour.

Men entering mines for duty shall be paid for two hours' work, whether the mine hoists coal for two hours or not.

The mines shall have the amount of air called for by the law.

The use of black oil as an illuminant in mines is prohibited.

All roads and entrances to mines shall be sprinkled at least twice a week.

Miners discharged by one operator must not be pro-

hibited by said operator from entering the service of another.

Scale of Day Wage Inside.

Miners (working by the day).....	\$3.40
Timbermen	3.40
Tracklayers	3.40
Tracklayers and timbermen's helpers.....	3.10
Shooters or shot firers	3.90
Machine runners	3.90
Machine runners' helpers	3.40
McGinty repairer and rope splicer	3.40
Drillers	3.75
Drivers	3.40
Inside engineer	3.25
Rope riders (main rope)	3.40
Rope riders (inside)	3.25
Greasers (boys)	2.00
Switch boys and boy coupling at partings.....	2.00
Trappers (boys)	1.50
Stable men or barn men inside.....	3.10
Inside laborers not classified	3.10
Pumpmen	3.10
Motormen	3.40
Motor brakemen and tailend riders	3.25
Gas watchman	4.00

Scale of Day Wages Outside.

Engineers, \$112.50 per month, based upon one eight-hour work day, provided, however, that engineers shall work the requisite number of hours (but not exceeding ten) when required by the operators, and shall be paid pro rata for such extra hours.

Per day.

Fireman	\$ 3.00
Head blacksmith (in charge of other blacksmiths)...	3.90
Other blacksmiths	3.50
Blacksmith's helper	2.75
Carpenters	3.50
Machinists	3.50
Machinists' helpers	2.85
Teamsters	2.75
Box car shovelers	3.00
Outside barn boss (per month).....	90.00
Assistant barn man (month).....	75.00
Electricians (in and around the mine).....	3.50
Boilermakers	4.00
Masons and bricklayers (in and around the mine)...	3.50
Slate pickers (boys)	2.00
Pipemen	3.40
Miners taken from face	3.40
Box car loader, runner	3.25
Night watchman (if performing work for which a scale is made)	2.75
Outside labor not classified	2.50
Greasers (boys)	2.00
Head dumpers	2.75
Tipplemen	2.60

In reviewing the \$20,000 damage suit against the Luhrig Coal Company, of Cincinnati, in which the jury assessed damages at \$13,000, Judge Wood stated the amount was excessive and placed it at \$7,750, with interest. Counsel for plaintiff accepted, but defendants excepted, and it will probably go to the Circuit Court.

WEST VIRGINIA COAL SAID TO BE FAVORED.

More than 46,000 Ohio union coal miners were idle 60 per cent of regular working hours during the last 18 months, largely because of the discrimination in freight rates against Ohio coal operators on lake-bound coal, according to the testimony of G. W. Savage, secretary-treasurer of the United Mine Workers of America, before the session of the Ohio Railroad Commission held in Columbus to hear complaints of eastern Ohio coal operators that the Wheeling and Lake Erie railway's rate on lake-bound coal is excessive.

While the thousands of Ohio union miners were idle, Mr. Savage said, the non-union miners of West Virginia lost approximately only 33⅓ per cent of the regular working hours of the last 18 months. He said this condition was largely caused because of the inability of Ohio coal operators to compete with West Virginia operators on account of much lower rates given the latter on lake-bound coal.

Previous testimony during the hearing was that the Ohio operators paid twice as much per mile for transporting lake-bound coal, in instances, as West Virginia operators. Wheeling and Lake Erie officials in reply had said their rate on Ohio coal was not excessive, but that of the coal carrying companies in West Virginia was ruinously low.

Another thing that kept union miners of Ohio idle and the non-union miners of West Virginia working, was the fact the mining cost in Ohio was much higher than in West Virginia because of higher wages paid Ohio miners, according to Mr. Savage. He said it cost Ohio operators from 80 to 85 cents to produce a ton of coal, while in West Virginia the cost was from 45 to 50 cents. The higher productive cost, together with the higher transportation rate on lake-bound coal, simply compelled Ohio operators to shut down their mines, because the West Virginia coal could be sold much cheaper, according to Mr. Savage.

It Closes Mines in Pennsylvania.

Johnstown, Pa., July 11.—Five thousand miners in the northern part of Cambria County, in the Central Pennsylvania bituminous field, are affected by the closing down of mines at Patton and Hastings, owing to the inability of the Pennsylvania operators to compete with cheap negro labor and more favorable railroad rates to tidewater, of the West Virginia fields. Operators state that this means only the beginning of a general closing down of mines throughout that section of Pennsylvania.

COAL IN MASSACHUSETTS AND RHODE ISLAND

For the first time since the beginning of the Geological Survey's series of annual reports on mineral resources of the United States Massachusetts appears in the list of coal producers. The production is not of great commercial importance, but it is of local interest. It amounted to 50 tons of brown coal, or lignite, and was mined at Vineyard Haven, on the island of Martha's Vineyard, Dukes County. All of the output was used in the manufacture of clay products by the company mining it. It was valued at \$3 a ton, this figure being based on the cost of other fuel that would do an equivalent amount of work.

Some coal, classed as anthracite, was formerly mined in the eastern part of Rhode Island and in the adjoining counties of Bristol and Plymouth, in Massachusetts, but for a number of years none has been mined in that region for

fuel purposes. This coal has really passed the anthracite stage and is of a graphitic character. Some of it has been mined recently and used as graphite. It is reported that an attempt will be made to utilize this coal as fuel by a process which includes the application of an inexpensive chemical that will aid in combustion. If successful, this venture will be of considerable interest.

CANADIAN CONCILIATION BOARD.

The Canadian Department of Labor is in receipt of the report of the members of the Board of Conciliation and Investigation which was appointed to investigate the dispute between the various coal operators in Alberta and Eastern British Columbia, members of the Western Coal Operators' Association, and their employees, members District 18 of the United Mine Workers' of America; also of minority report signed by Mr. Colin MacLeod, appointed on the recommendation of the operators. The report recommends a general agreement based on the old agreement which expired on March 31st, 1909, the terms of the new agreement to be binding from April, 1909, to March, 1911. The minority report by Colin MacLeod, nominee of the coal operators differs with the other only as regards the preamble and check clause.

LOOK FOR RATES ON SOUTHERN COAL.

A committee of coal operators, consisting of J. L. Boyd, T. I. Stephenson, R. O. Campbell, H. S. Piess, W. A. Piess, H. M. LaFollette, and others, went to Washington to confer with President Finley, of the Southern Railway Company, with reference to a change in railroad rates on coal from the Tennessee-Kentucky field to the south. After their return home, one of the coal men said:

"President Finley made a most favorable impression on the coal operators. We are all enthusiastic in our opinion as to the president's disposition to deal fairly, and to give each respective coal district served by the Southern Railway Company the advantages that they desire. We also believe that President Finley will make such readjustment of rates as will be equitable and that he will provide a competitive basis.

MINERAL RESOURCES OF TENNESSEE.

Of all the States of the South, Alabama alone exceeds Tennessee in the value of its output of minerals. The output of Tennessee exceeds that of Georgia and Kentucky combined, and, omitting Alabama, Kentucky, and Texas, it exceeds the combined output of all the other States of the South. In the production of phosphate rock Tennessee is exceeded by Florida only, and in barytes by Missouri. In the production of the quarries it stands fifteenth, but under this head is included marble, in which the State ranks fourth. In the production of copper, the State ranks sixth, in that of coke seventh, of pig iron eighth, of coal twelfth, and of clay products twenty-first.

OPTION ON COAL LANDS.

The United States Steel Company has taken an option until August 1 on the coal mining properties of the Hammond Company, which include what were formerly the Kelley holdings in the Danville (Ill.) district, and at one time valued at \$3,000,000. In addition there is much coal land owned or leased by the Hammond Company, in all, perhaps, 10,000 acres, along the state line in Vermillion County, Ill., and Vermillion County, Ind. The Vermillion County (Ill.) coal is particularly desired because it is adaptable for producer gas, used in steel making, and is nearer to Gary than coal of any quality.

GATHERED FROM THE EXCHANGES

The U. S. Steel Corporation has contracted with H. Koppers, of Joliet, for the erection of 560 coke ovens at the Gary plant. The Koppers system has been in use at the Joliet plant of the Illinois Steel Co.

Jamison Coal and Coke Company closed a deal for the purchase of 7,000 acres of coal land near Fairmont, W. Va., from the Barracksville Coal Company and the Philadelphia & Reading Railroad Company. The consideration is about \$2,000,000.

China produces coal enough for the requirements of the interior, but owing to the expense of land carriage finds it an economy to import coal from Japan and Australia to its own seaboard. This will not long be the case, as the extension of railways is rapidly setting in.

The next few weeks is expected to witness the return of thousands of foreign workmen to the coke fields. From figures furnished by Secretary George B. Irwin of the Independent Coke Producers' Association, it seems assured that the business depression has disappeared in the Klondike and Connellsville regions.

Oregon at last has a real coal mine, whence genuine bituminous coal of highest fuel power and coking quality will soon be extracted in commercial quantities. The property is located at Scotts Mills, six miles back of Mt. Angel, and only 43 miles from Portland. A railroad has been surveyed direct to the mine.

While the United States is the greatest coke manufacturing country in the world, there were imported in the fiscal year 1908, 119,196 tons of coke, valued at \$549,044. Canada supplied \$203,887 worth, the United Kingdom \$189,758, Australasia \$73,529, and Germany \$65,418. From China came 10 tons, valued at \$90.

Coal land valued at \$4,000,000 has been bought by the Jones & Laughlin Steel Company in Washington county, Pa. This is one of the largest deals of this kind in the Pittsburgh district in years. This will insure a permanent supply of coke for the new Aliquippa plant of the company when it is ready. A battery of 888 by-product coke ovens will be built.

Not since the general slump in the coal business, nearly two years ago, has such an important step been taken as the completion of the new C. F. & I. coke washer at Sopris, Col., at a cost of \$150,000. The plant was put in operation recently, the power being supplied by the Southern Colorado Power Company of Trinidad, which is running transmission lines to several coal camps of the county.

The Sunday Creek Company has let a contract to Bart Davidson of Athens, O., for the erection of 100 miners' houses at its properties in the Sugar Creek district. The company already has a number of houses in this district, but anticipating the employment of a number of miners, owing to betterment in the coal trade, will erect this number additional. The 100 houses will cost about \$60,000.

The Superior Fuel & Briquette Company, which was organized in Salt Lake City with a capital of \$250,000, to manufacture coal briquettes from waste or slack coal, promises soon to have its product on the market. The company has been experimenting during the last two months on a suitable binder for the coal dust, and has found that the native asphalt, that can be found in great quantities in this state, answers the purpose. The erection of a \$100,000 briquetting plant at Coalville will start at once and will be in commission before fall.

Salt Lake coal dealers announce that the demand for coal at the reduced price of \$5 a ton has not been great enough to warrant the maintenance of the price any longer, and that a new schedule of prices will go into effect. All of the coal dealers in the city have agreed to sell coal at the regular winter price.

There was shipped from Wilkes-Barre, Pa., the largest single piece of anthracite ever mined. It went to the Alaska-Yukon-Pacific Exposition at Seattle, and will be on exhibition there for six months. It weighs 1,800 pounds, contains about 80 cubic feet of coal, and came from the mines of the Kingston Coal Company.

Morgantown business men interested in the Granain coal field on Fish Creek, Marshall county, W. Va., have decided to merge their holdings in the district and organize a stock company under the laws of West Virginia. The tract will be held until a suitable price can be secured or until it is thought profitable to develop it.

There is a report in Bluefield, W. Va., to the effect that the Red Jacket Coal and Coke Company, operating at Red Jacket, has installed wireless telegraph instruments at its operation and at the Norfolk and Chesapeake yards, which handle its products in Cincinnati, and through this means the shipments of the company are directed.

Coal miners of Roslyn and Cle Elum have been on strike, but decided to return to work pending an adjustment of the troubles of which they complain. Their complaint is that while they get but two or three days' work a week, others of the miners, said to be favored by the Northwestern Improvement Company, are favored and are given all the work.

It is believed all records for coal output in New Mexico and Colorado have been broken by the Van Houten mine or Willoa mine, as it is also called, at Van Houten, which recently produced in one ten-hour day forty-four hundred tons of coal. Superintendent James Stewart of the mine says, moreover, that the mine has not reached its ten-hour limit and will break this record soon.

Tennessee Coal, Iron & Railroad Company is preparing to put something like \$3,000,000 improvements in Alabama. The betterments are understood to include cast-iron pipe foundry at or near Ensley; a structural steel plant at Ensley; complete renovation of existing ovens and the erection of additional coke ovens in the Blue Creek district, and further improvement of the furnaces at Ensley.

Surveys have been completed for the Cumberland Northern Railway, the new line projected to extend through undeveloped coal fields of eastern Kentucky, and the company is now acquiring rights of way. Property owners along the proposed route are cooperating in the matter. The new line will extend from Barbourville, Ky., where it will connect with the recently extended Cumberland Valley Railroad to Beattyville, Lee county, a distance of about 70 miles.

The Utah Fuel Company will have to pay only \$19.50 costs instead of \$232.20 in the case in which it pleaded guilty and was fined \$8,000. Judge John A. Marshall, in the United States court at Salt Lake City, granted a motion of the fuel company's attorney to retax the costs in the case. The fuel company contended that it should not be compelled to pay for the attendance of witnesses upon the grand jury which found the indictment against the company. The judge took the same view of the case.

THE COAL RESOURCES OF THE ENTIRE WORLD

In a recent tabulation made by Henry S. Fleming, secretary of the Bituminous Coal Trade Association, an attempt is made to estimate the coal resources of the world. This is embodied in the following table showing the area and contents of the principal coal deposits:

	Sq. miles.	Estimated contents, tons.
United States	409,900	2,000,000 million
China	232,500	1,500,000 "
Canada	65,000	"
India	35,000	"
N. S. Wales	24,000	15,000 "
Russia	20,000	"
Great Britain	12,000	146,875 "
Spain	5,500	4,000 "
Japan	5,500	50,000 "
France	2,500	25,000 "
Austria-Hungary	1,800	30,000 "
Germany	1,700	164,344 "
Belgium	500	20,000 "
Siberia, Central Asia, Africa,	180,000	"

At the present time the United States ranks first among the nations in the production and consumption of coal. Until within a year or two the development of new properties had been so rapid that the railroads have been unable to transport all the coal that was produced. These rapid strides resulted in the production of 350,000,000 tons in 1905 in an average of 200 working days, compared with 236,000,000 tons in Great Britain in not less than 280 working days in the year.

Among consumers railroads in their rapid expansion have played a leading part. It has been calculated that for the five years ending with 1900 the average gross consumption of the railroads was 57,390,000 tons, and for the five years ending with 1905 it was 85,997,000 tons, an increase of 49.8 per cent. Coal used for coking between 1900 and 1906 increased from 23,673,000 tons to 44,223,818 tons, or 66.7 per cent. In the United States the percentage of coal consumed is 35.3 per cent. In Great Britain it is only 7.78 per cent, and in Germany 9.82 per cent. For railroads and coking uses 49.40 per cent of all the coal consumed in the United States is required.

SMOKELESS COMBUSTION POSSIBLE.

Notwithstanding the belief of many that smokeless combustion of bituminous coals is not possible, many plants of Chicago and elsewhere are demonstrating that it is possible, writes George H. Ashley, of the United States Geological Survey, in his exhaustive treatise on Indiana coals which will appear in the forthcoming report of the State Geologist. He then adds: "Mr. A. Bement, consulting engineer of the Chicago city government, has stated the requirements for smokeless combustion of such coals as follows:

"(1) That the evolution of gas from the coal shall proceed uniformly; (2) that the gases distilled uniformly from the coal shall enter a firebrick chamber either of sufficient length to allow their natural combustion, or be provided with such auxiliary mixing and baffling devices as will effect the artificial mixture and complete combustion of the gases before their exit from the chamber."

"To secure these conditions, it is of the utmost importance that the stoking be uniform and regular. The best results are obtained from some form of chaingrate stoker that automatically receives the coal at one end, moves it along regularly and carries out the ashes at the other end. * * *

Stoking so as to remove the smoke nuisance is almost impossible by hand firing. When the firing is intermittent it is often necessary to supply temporarily some additional oxygen immediately after firing, when for a short time a large volume of gas will be given off. A steam jet is often used for this purpose. * * * In the city of Washington (where bituminous coal is used extensively) the smoke nuisance laws are so rigidly enforced that today no more smoke can be seen than could be seen in Indianapolis when the use of natural gas was at its height."

INCREASED PETROLEUM PRODUCTION IN 1908.

The production of petroleum in the United States during 1908 amounted to 179,572,479 barrels, valued at \$129,706,258, an increase in quantity of 8.11 per cent over 1907. Oklahoma led all the states in production, with a total of 45,798,765 barrels, an increase of 5.23 per cent over 1907; California was a close second, with 44,854,737 barrels, an increase of 12.85 per cent over 1907; but Illinois gained the greatest percentage, rising from 24,281,973 barrels in 1907 to 33,685,106 barrels in 1908, a gain of 38.72 per cent. Colorado, Louisiana, Michigan, Missouri, Utah, Wyoming and West Virginia also showed gains in production. The declines were in Indiana, where it was nearly 36 per cent; in Kansas, 25 per cent; Ohio, 11 per cent; Texas, 9 per cent; Pennsylvania, nearly 6 per cent; New York, 4.3 per cent, and Kentucky and Tennessee, 11 per cent.

The average price of petroleum for the entire country in 1908 remained identical with that in 1907, but there were considerable variations of an important character in individual states. The most notable of these was the increase in price in California, from 37 cents a barrel in 1907 to 52½ cents a barrel in 1908. The Gulf States, Louisiana and Texas, showed a decline in value from a little over 80 cents to 60 cents. The Appalachian oil showed a slight increase in value, from \$1.75 in 1907 to \$1.79 in 1908. Prices were remarkably steady considering the notable increase over the large production of 1907.

The increased activity in the three great fields—California, Oklahoma and Illinois—was the dominant feature of the situation rather than the discovery and opening of any considerable new fields. The principal new field to gain prominence was the Caddo pool, in northwestern Louisiana.

H. C. FRICK SEES BOOM FOR BUSINESS.

H. C. Frick, in a recent interview following his return from New York, was enthusiastic regarding the business situation and said that the outlook for splendid trade was exceedingly rosy and growing brighter every day. Mr. Frick arrived at his office shortly before 10 o'clock, and several newspaper men were waiting for him.

"What is the business outlook?" he was asked.

"It is fine—never looked better than just now."

"Is the steel business improving?"

"Yes; every day."

"Do you believe that conditions the latter part of this year will be as bright as they were before the panic?"

"I look for a good year," he said. "General business conditions are rapidly improving, and the steel business is in excellent shape. There is good reason to believe that by fall we shall be as prosperous as before the panic. There is, according to all indications, going to be a large corn crop, and if the crops are good I believe they will materially help. Things look bright, and they are growing better every day."

The first English newspaper, the English Mercuria, was printed in London by Christopher Barker, July 28, 1588.

SHOT FIRERS

A Paper Read Before the Mine Inspectors' Institute of the United States of America, at Scranton, Pa., June 29, 1909,
by PETER HANRATY, Chief Mine Inspector of Oklahoma.

I will endeavor to give you my views and opinion acquired by 25 years of practical experience as a miner and shot firer in what, I believe, to be the most dangerous mines in the United States (Indian Territory, now Oklahoma), regarding mine explosions, their cause and prevention, and a brief history of some of the disasters that have happened.

Up until the year 1885, the miners fired their own shots and it was a common occurrence for them to hold on to the props and rails to keep from being blown away by windy shots at firing time, and it is here the term "windy shot" originated, at least I never heard the expression before the year 1884. Not knowing the dangers, we used to laugh when coal dust was blown into our ears, eyes, nose, and mouth, but the laugh soon changed to horror, for on February 2, 1885, an explosion occurred in Mine No. 1, Savanna, in which one man lost his life and a number were severely burned. In the same month a windy shot burned a number of men in Mine No. 10, Krebs, and in the following month in Mine No. 7, Krebs, when the miners were firing their own shots an explosion occurred which killed 13 men. Windy shots were beginning to get serious. Shot firers were then employed to fire the shots in the rooms. The miners working in slopes and entries were allowed to fire their own shots, which proved very disastrous to human life in after years, for in the year 1892, on January 7, an explosion took place in Mine No. 11, Krebs, when the entry men were firing their shots, which killed 100 men and burned and crippled nearly 200 more. The explosion was caused by a shot fired in the entry nearest the intake airway. Since that time no one but shot firers has been allowed to fire shots, in Oklahoma, in mines that are considered dangerous.

* * *

In the year 1885, I was one of the men who were employed to fire the shots, and, believing at that time that nothing but firedamp would cause an explosion, I examined every place carefully before firing my shots and I soon discovered to my satisfaction, that there was something besides firedamp that caused explosions; for as spring approached with its warm air and moisture, explosions ceased, and for 8 months, during the period of warm air and moisture, we never had an explosion or windy shot. But as winter approached with its cool air, small explosions (or windy shots as they were called) became frequent. In the early part of January, 1886, it was warm as sometimes happens in this part of the country. The wind turned from the south and began blowing from the northwest. The mercury dropped 40 degrees, and by 6 o'clock, when my partner and I went down into the mine, a regular blizzard was blowing. We began firing the shots as was customary, on the last or end of the air, and proceeded toward the intake. When we got to the last entry, that is the one nearest the bottom of the slope, where the air had only traveled some 300 yards from the bottom of the intake shaft, the air was bitter cold. There was no firedamp in the entry that could be detected by my Davy lamp, but this entry, and the one opposite, were the ones that gave us all the trouble from windy shots. The condition of the shots were practically the same as they had been all summer. We lighted two shots in room 3, and ran to an old room near the bottom of the shaft as was customary when firing these entries. We had scarcely gotten there when an explosion took place which threw fire out of the

mine, wrecked the fan and blew out every rock stopping between the air-course and the slope. After that explosion I became convinced that firedamp was not a necessary factor in producing explosions, but that coal dust and cold air, when mixed in certain proportion, form an extremely explosive mixture, and a shot overcharged with powder that will create an intense heat and flame will cause an explosion. I informed the pit boss, Hugh Heatherington, of the conclusion I had reached, and insisted that the company sprinkle the dust, which was done in a crude way with water cars, but it was very ineffective and did not stop the terrific explosions which were becoming more numerous. (I have found out since, that sprinkling or spraying, in itself, is not very effective, as a direct mixture of water and dust is very difficult and practically impossible.) But as spring advanced and with it warm air and drops of moisture began to appear, explosions again ceased, as there was nothing to cause an explosion, for the humidity of the air dampened the dust that was on the roof, sides, floor, and in suspension.

* * *

In studying and discussing the atmospheric conditions in the mines with shot firers and other parties, I maintained that if we could create the same temperature and moisture in winter as we had in summer, explosions would be almost unknown. In the winter of 1886, it was almost impossible to get shot firers. Many nights I had to fire the shots alone. It was one of those nights that the idea struck me to use the exhaust of the pump, and the more I studied and experimented, the more convinced I became that steam was the solution of the problem. We not only used the exhaust from the pumps, but we laid pipe and allowed steam to escape into the intake airway. The steam as it escaped warmed the air, making the mine's condition practically the same in winter as in summer. We had no windy shots or explosions when we used the steam, but the moisture produced by the steam caused a slacking or disintegration of the roof, and, the slope and entries not being timbered, large falls were frequent, which entailed quite an expense, and orders were issued to discontinue the use of steam, which was done. In a very short time windy shots and disastrous explosions again commenced to become numerous. The following winter I quit the dangerous occupation of firing shots, and since that time numerous shot firers have been killed by explosions, and the number will continue to increase unless steam is used to heat the intake air; for explosions never happened from shots that have been fired after the air has traveled a long distance from the intake, and where the air has become the same temperature as the mine itself; but always happen nearest the intake, where the air is the purest and coldest. Nothing has occurred to change my views in the last 24 years; but the result of continuous observation and investigation of explosions, since that time, has proven beyond the question of a doubt, that to overcome the dangers due to a cold-air current entering a mine and having its capacity to absorb moisture raised by the natural heat of the mine, it is necessary to heat the intake air and saturate the same at a point near the foot of the shaft, so the air will pass into the workings at a normal temperature and practically saturated. I feel sure that if the atmosphere of the mine is always in the same condition, and not to allow any change in the atmospheric conditions, due to sudden

changes of temperature on the outside, such as the difference between summer and winter, if the ventilation is not in any way stopped, and if we keep the absolute amount of water vapor in the air-current always the same, never allowing it to change, then coal dust will not and cannot explode.

The custom of slowing the fan or in any manner reducing the circulation at, or just previous to, the firing of the shots, should be prohibited. The idea that mines are getting too much air is simply an endeavor to justify those who have too little. I believe that 50 per cent of the shot firers that are killed in this state from windy shots, die from the effects of afterdamp, due to the insufficiency of air caused by the slowing or shutting down of the fan. A large volume of air should be maintained at all times and the temperature of the mines kept the same.

* * *

The question of coal-mine accidents—their cause and prevention, has been the all important subject of discussion during the last few years. The startling ideas expressed by some of the mining experts, would be amusing, if the subject was not serious. Some of them claim we are sending too much air through the mine workings. In every explosion that has killed shot firers, in the last 12 years, in this state, the ventilation current has been reduced, while shots were being fired. Some claim that if coal was undercut explosions would not happen. One of the worst explosions we ever had was from a shot where the coal was undercut by a machine. Others claim that only flameless and safety powder should be used. There is no such thing as "safety" or "flameless" powder. We had two explosions last winter, where the so-called "safety" or "flameless" powder was used. High-priced experts claim the run-of-mine system is the cause of all explosions. We have had explosions under the screened-coal system. Some advanced the idea that atmospheric electricity is the cause of all disasters in mines; I know nothing about this question. Others claim that under the 8-hour day the miners fire all the shots in from 15 to 20 minutes, thereby causing explosions. I have fired shots that caused explosions, where only one room was fired at a time, and where 3 hours were required to fire 15 rooms. Some say that firedamp is the only thing that can cause explosions. I have already stated that firedamp was not a necessary factor in creating explosions. Some cowardly corporation officials, when they have an explosion, claim that explosions are the "acts of God." In Oklahoma we have too much respect for God Almighty to blame Him for the carelessness, ignorance, and negligence of the people who should know better.

Some officials of coal companies claim that the companies should not be held responsible, and will point to the Coroner's jury, that it brought in a verdict stating that the explosion was due to a blown-out shot, which of course means that the miner was negligent, and that the company was not to blame. What a cowardly outrage for a Coroner's jury to hold the dead responsible, when they are not there to defend themselves! Corporations should be held responsible for the death or injury of every one of their employes.

RULES.

The following rules should be adopted and made part of the laws of each state:

Rule I.—In every bituminous coal mine, without exception, where powder is used in any quantity, shot firers shall be employed to fire the shots, after all the miners and other employes have left the mine.

Rule II.—No person other than the shot firer shall tamp any hole. All holes shall be tamped to the mouth with fireclay, or other non-inflammable material, suitable for use in tamping, and in no case shall coal dust or small pieces of coal be used in tamping.

Rule III.—Shot firers shall not light any shot or shots, in any entry, room or place, where there is any powder, other than that contained in cartridges to be tamped by him; and where coal is blasted off the solid, there shall be as much tamping as there is powder. (The excessive use of powder should be prohibited, as I believe one-third of the powder used today does not help to break the coal, but is thrown from the hole while still burning and its energy is expended in the air.)

Rule IV.—Shot firers shall not light the shots in more than one working place, at any one time in any one split of air and a shot following another shot, and depending upon the success of the first, shall not be fired. The use of dynamite or other high explosives, mixed with black powder, is forbidden.

Rule V.—Shot firers shall fire no shot where there is any standing gas in any working place, nor in any abandoned part of any mine. In all mines, break-throughs shall be made every 40 feet.

Rule VI.—Shot firers shall not fire any shots, in any mine where the temperature is lower at the intake than it is at the outlet.

Rule VII.—Mine inspectors are empowered to act as police officers, with full power to arrest and detain any person found violating any provisions of the law, or rules made by them for the protection of life. They are also empowered to revoke the certificate of the superintendent, pit boss, or fire boss when they find them not enforcing the law or their orders.

Rule VIII.—It is made a criminal offense to give any inexperienced man a place in a mine where he can locate, drill, and fill holes with powder and be allowed to fire the same.

We can never claim to have reached a high state of civilization until the taking of human life is forbidden when it can be avoided, regardless of what it cost to produce coal. If the above rules had been in effect, 98 per cent of the human lives destroyed by explosions would have been saved. And, unless these rules are put into effect, thousands more will be sacrificed, or public opinion will force the coal companies to produce coal without powder or employ shot firers to fire the shots after all the miners and other employes have left the mine.

THE STRIKE AT CAPE BRETON.

The coal miners' strike at Cape Breton presents a novel feature that is significant of the international scope of labor wars. Although the miners are situated in Canada, the strike was ordered by the United Mine Workers of America, an organization which has but recently established branches in the Dominion. The local Canadian labor organization had a contract with the Dominion Coal Company as to hours and wages, which will not expire until next December. They are not the men who struck, although the American miners gained a large following from them. The company refused to recognize the United Mine Workers' organization, on the ground that "the organization would be used not to better the condition of the men of Nova Scotia, but to so hamper the operations of the Canadian mines that rivals in the United States would get a firmer grip on Canadian markets." This argument on national lines may appeal to Canadian miners, but the probability is the company is resorting to it in order to prevent the unionizing of the Canadian miners by the great labor organization of the United Mine Workers.

The first idea of electricity was given by two globes of brimstone, by Ottoguericke, in 1467; Dr. Franklin's discoveries were in 1780.

MINE INSPECTORS SEE EXPLOSION TESTS

Technologic Branch of the United States Geological Survey Show Members of the Mine Inspectors' Institute of the United States Usefulness and Practicality of the Work They Are Doing—An Object Lesson for Illinois.

(Text and Photographs by JAMES TAYLOR, State Mine Inspector, Peoria, Ill. Reprinted to Supply an Extraordinary Demand.)

On Saturday, June 12th, the members of the Mine Inspectors Institute of the United States of America were invited by Dr. J. A. Homer, expert in charge, Technologic Branch of the United States Geological Survey, to pay a visit to the Pittsburg, Pa., station. This branch of the United States Geological Survey is interested in the chemical and practical analyses of fuel, cement, mine gases, in explosives and mine explosions, their cause and prevention. For this work they have a complete testing laboratory, where they are making careful examinations of the various explosives used in coal mining with a view of determining how much of a factor explosives are in causing explosions in dusty mines where fire damp has not been detected.

The program arranged for the instruction of the visiting inspectors is outlined in the illustrations and accompanying matter herewith:

or Marsh gas; Ethane is C_2H_6 . These compounds bear a simple relation to one another, as far as composition is concerned.)



Fig. 1. Gas and Dust Gallery No. 1.

Figure 1 shows what is known as Gas and Dust Gallery No. 1. This gallery is a large boiler iron gallery 6 feet 4 inches in diameter and 100 feet in length. Inside, at each circular joint, is an angle iron around the inside circumference, each representing a section of the gallery. At the end nearest you as you look at Figure 1 is a concrete building in which a cannon is imbedded in concrete. This represents the working face of an entry, while the charged cannon represents a dead hole that will cause a windy or blown out shot.

At one of the sections a paper brattice is placed around the angle iron, making it tight. The Methane or Marsh gas is then introduced through a pipe to any or all sections of the gallery. There are short-iron shelves 4 inches wide on each side of the gallery, upon which coal dust can be placed. At the top of the gallery there are safety doors or valves placed at stated distances the whole length, and these are left so as to open whenever there is an explosion inside the gallery.

Test A in gas and dust gallery No. 1 was to determine the effect of a charge of Aetna coal powder "A" (D-759) tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitro-glycerine dynamite when fired into a mixture of gas and air containing 8 per cent of Methane and Ethane. (Methane is CH_4



Fig. 2. Gas and Dust Gallery No. 1, Showing Result of Test A.

The snap shot reproduced in Figure 2 was secured by me immediately after the ignition of the charge; you will observe a steam mist issuing from the open valves which are located on the top of the gallery. There was no ignition of the gas, hence no explosion.



Fig. 3. Gas and Dust Gallery No. 2, Showing Result of Test B.

Figure 3 shows gas and dust gallery No. 2, in which was made Test B. The purpose of this test was to determine the effect of an electric spark on a gas and air mixture containing 8 per cent of Methane and Ethane. The result of the test is readily understood by Figure 3, which was taken at the moment of explosion. The flame of the explosion extended a distance of about 20 feet beyond the mouth of the gallery. You will observe in the flame a portion of the paper brattice which had been used for a partition while filling the gallery with gas.

In Figure 4 the unconsumed brattice paper will be noticed on the ground, and on the angle iron around the inside of the gallery. The importance of this test is of such a

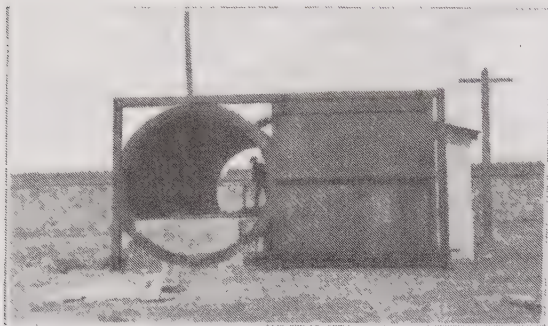


Fig. 4. Gas and Dust Gallery No. 2.

nature as to call the attention of the mining interests of this country to the use of electricity in gaseous mines.

In Figure 5 you observe the mine inspectors of the different states about to enter the gallery for the purpose of testing the mixture as determined by the height of flames of the different kinds of safety lamps. Each inspector was furnished with a safety lamp, the number of which was taken down in a note book opposite his name. He was requested to make an examination of the mixture of air and gas and on his return from the gallery to report his finding to the mining expert in charge of this test as to the action of gas in the lamp he carried. There were no two lamps of the same make and different results were obtained. You



Fig. 5. Gas and Dust Gallery No. 2.

will notice J. W. Paul entering the gallery with a safety lamp. He has charge of the safety lamp test. Test J was in Gallery No. 2, and was the testing of the percentage of a mixture of gas and air containing 3 per cent of Methane and Ethane with different safety lamps by the height of the flame. In this test a Wolf lamp in my possession gave a flame about $\frac{1}{4}$ inch high. Gallery No. 2 is 10 feet in diameter and 30 feet long. It is one of the important pathfinders in the investigation of fire damp, and electricity. The tests at this station fully demonstrate that Dr. Holmes and his associates are doing things in practice and not in theory only.

Test C, in gas and dust gallery No. 1, was to determine the effect of a charge of carbonite No. 1 (D-661), tamped with one pound of dry fire clay—equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into a mixture of gas and air containing 8 per cent of Methane and Ethane. There was no ignition of the gas in this test.

Test D, in the lamp gallery, on the first floor building No. 17, was the testing of single gauze lamps, not bonneted,

in a horizontal current of gas and air containing 8 per cent of Methane and Ethane at a velocity of 600 feet per minute.

The inspectors from the various states were so much interested in this test that they requested Dr. Holmes to arrange for other tests, which he did. The inspectors of the several states were placed in different groups, and made a very exhaustive investigation of testing the safety lamps with different velocities and mixture of gas.

This gallery is one of the best pathfinders for safety lamps in the presence of fire damp, in small or great velocities of air current. Yet we have been unable to find a substitute for the gauze of a safety lamp. With all the different arrangements of safety lamps, not one of them is of any service as a safe lamp in the presence of fire damp without the wire gauze; and up to the present time we have not learned to dispense with it on our safety lamps.



Fig. 6. Gas and Dust Gallery No. 1, Showing Results of Test G.

Test G, in Gas and Dust Gallery No. 1, was to determine the effect of a charge of FF black blasting powder (B-767) tamped with two pounds of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite, when fired into a mixture of gas and air containing 8 per cent of Methane and Ethane.

Figure 6 shows the effect of this explosion. The gas was ignited by the powder; the light smoke is seen issuing from the safety valves on top of the gallery. You will observe Mr. Hall, who has charge of the explosive test, going towards gallery No. 1 to give instruction in regard to the



Fig. 7. Mr. Rhys, of Iowa, T. Moses of Illinois, and Mr. Johnson.

next test. The mine explosives investigation work is in charge of Clarence Hall, an explosive expert.

Test H was in the Rescue Room, second floor of building No. 17. This was a demonstration of rescue apparatus

in a gas-tight room, and was very instructive to those interested in rescue work after an explosion. It demonstrated that with the use of the helmet a party of men could descend into a mine containing noxious gas, and save those who had been overcome. Figure 7 shows the three persons returning from the testing chamber in which they wore the helmet. The one to the left is Mr. Rhys of Iowa, the center figure is Thomas Moses of Illinois, and the third is the expert who had charge of the gas-tight room.

Test I was in Gas and Dust Gallery No. 1, to determine the effect of a charge of Coalite No. 1 (D-656) tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into 120 pounds of bituminous coal dust (M-715) 100 mesh fine, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3; 100 pounds on side shelves in Sections 1 to 15 inclusive. There was no ignition of the coal dust by this test. This is one of the permissible explosives.

Test K in Gas and Dust Gallery No. 1 was to determine the effect of a charge of Collier Dynamite No. 1 (D-681) tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite. When fired into 120 pounds of bituminous coal dust (M-715), 100 mesh fine, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3, and 100 pounds on side shelves in Sections 1 to 15 inclusive. No ignition of coal dust by this test.

Test L in Gas and Dust Gallery No. 2, was a continuation of Test K.

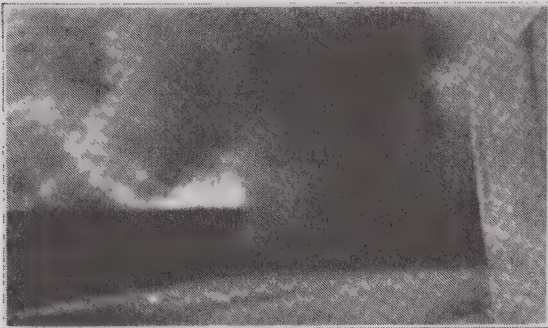


Fig. 8. Gas and Dust Gallery No. 1. Showing Results of Test O; Dust Explosion With FF Black Blasting Powder.

Test M, in Gas and Dust Gallery No. 1, was to determine the effect of a charge of Masurite M. L. F. (M-775), tamped with one pound of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into 120 pounds of bituminous coal dust (M-715), 100 mesh, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3, and 100 pounds on side shelves in Sections 1 to 15 inclusive. No ignition of the coal dust by this test. Masurite M. L. F. is on the list of permissible explosives.

Test N, in Gas and Dust Gallery No. 2, was a continuation of Test K.

Test O, in Gas and Dust Gallery No. 1, was to determine the effect of a charge of FF black blasting powder (B-767) tamped with two pounds of dry fire clay, equivalent in disruptive force to $\frac{1}{2}$ pound of 40 per cent nitroglycerine dynamite when fired into 120 pounds of bituminous coal dust (M-715), 100 mesh fine, from the Pittsburg seam; 20 pounds placed on horse in Sections 1, 2 and 3.

and 100 pounds on side shelves in Sections 1 to 15 inclusive. There was a terrific explosion; all the safety valves were blown open, and a faint idea of the force of the explosion of the coal dust may be learned from Figure 8, which is a snap shot taken immediately after the explosion. Figure 9 shows the smoke rushing out of the open end of the gallery, and from the safety valves on top.

After the smoke had cleared away and the gallery cooled off another charge of FF black blasting powder was fired, without putting any more dust in the gallery, and we wit-



Fig. 9. Flame Testing Apparatus; Also Ballistic Pendulum to the Right.

nessed another explosion of the coal dust remaining from Test O.

If you will make a comparison of Test I, K, M and O, you will find that the same amount of coal dust was distributed in the same quantity and at the same places in Sections 1, 2 and 3. The samples of coal dust were the same (M-175) Pittsburg seam. Yet we find that it required black blasting powder to explode the coal dust. In Test O there was only $\frac{2}{3}$ of a pound of FF black blasting powder. This is the powder we are using in the mines of Illinois, and which is causing so many explosions throughout the



Fig. 10. Ballistic Pendulum.

United States. In making an examination of the gallery after both explosions I found that fine dust or soot was on the lee side, of where the shot was fired.

In the gallery there are angle irons around the inside, at every circular joint, and we found the dust and soot on the outward side of these angle irons, and none on the side facing the place where the shot was fired. It would be money well spent if all coal companies in this state would send their superintendents and mine managers to this testing station that they may witness the effect of black blasting powder fired in a mixture of fine coal dust. It would

be a step in the direction of bringing about conditions in the mines of this state that would remove the cause of similar explosions and thereby saving life and property.

Figure 10 shows the Flame Test Apparatus. In the building to which the flame test apparatus is attached is a dark room in which a photographic machine is placed, that records the length and duration of the flame. While I was in this room two tests were made, one with black powder, and one with a permissible explosive. This test demonstrated that with equal quantities of each explosive the black powder gave three times the length of flame, and has a duration three thousand times that of one of the permissible explosives.

The testing apparatus consists of a vertical iron stack in which a cannon is imbedded in concrete at the base of the stack. When the test is being made the top of the iron stack is covered tight with canvas and hoops, which at the time of explosion is destroyed. This covering is renewed at every test.

To the right in Figure 10 will be seen the Ballistic Pendulum, in which the various explosives are tested as to their relative force.

Figure 11 is another view of the Ballistic Pendulum.

OHIO COAL PRODUCTION DURING THE YEAR 1908

Ohio produced in 1908, according to E. W. Parker, of the United States Geological Survey, 26,270,639 short tons of coal, having a spot value of \$27,897,704. Early in January, 1909, it was stated that according to opinions expressed by some of the larger operators the 1908 output would show a decrease of about 15 per cent as compared with 1907. The reports to the Geological Survey show that the production decreased 5,871,780 short tons, or 18.27 per cent, in quantity, and \$7,427,042, or 21.03 per cent, in value. The average price per ton declined from \$1.10 to \$1.06. Some of the smaller operators whose trade was largely domestic, held their own or even increased their output during the year, but many of the large operators, whose shipments were made for railroad and factory consumption, showed a marked falling off, some as much as 20 per cent. The coal market of 1908 was affected early in the year principally by the uncertainty of manufacturers as to the conditions following the panic, and later by the uncertainty as to the results of the Presidential election. After the election operators expressed a feeling that there would be a gradual if not rapid return of prosperity.

Operating and Labor Conditions.

Throughout 1908 the transportation facilities were fully up to the requirements except for a short period toward the close of lake navigation. That the labor supply was ample is shown by the fact that notwithstanding the decreased tonnage there was an increase of nearly 600 in the number of men employed during the year. Operations were suspended at a number of mines during the spring, the principal contention being the length of time that the agreement between the operators and the miners should extend, the operators contending for a two-year agreement, while the miners desired an agreement for one year. The scale was finally signed for a period of two years. In August the miners of the Crooksheld district, Guernsey and Muskingum counties, 25 in number, struck because of a disagreement over the removal of bone from the coal. There were altogether during the year 21,084 men on strike, the total time lost being 567,450 days, or an average of 27 days each.

The total number of men employed in the coal mines of

the State was 47,407, who made an average of 161 days, compared with 46,833 men for an average of 199 days in 1907. The average production per man per day was 3.44 tons in 1908, about the same as in 1907, when it was 3.45 tons. Owing to the fewer number of days worked in 1908, however, the average production for each man throughout the year was only 554 tons, compared with 686 tons in 1907. As in other states where coal mining is carried on under agreement with the United Mine Workers of America, the mines of Ohio, with a few exceptions, were operated eight hours a day, 510 mines, employing 45,742 men, out of a total of 47,407 for the State, being on the eight-hour basis. Eight mines, employing 1,004 men, worked nine hours, and three mines, employing 35 men, worked ten hours. There were 626 men whose time was not reported.

Ohio continues to lead all the other coal-producing states in the percentage of the total product which is mined by the use of machines. The statistics for 1908 show that there were 1,343 machines in use, the machine-mined product amounting to over 75 per cent of the total output. In 1907 there were 1,328 machines in use and the machine-mined product amounted to about 77 per cent of the total. Of the machines in use in 1908, 1,069 were of the chain-breast pattern, 135 of the pick or puncher type, 5 long-wall machines, and 134 chain shearing machines.

Marius R. Campbell, of the United States Geological Survey, in his report on the coal fields of the United States, estimates that there were 86,028,000,000 short tons in the original coal supply of Ohio. The total production of the State to the close of 1908 was 519,039,997 short tons, of which the 1908 output amounted to about 5 per cent. This total production represents an exhaustion of 779,000,000 tons, or 0.9 per cent of the estimated original supply.

COAL GONE IN 131 YEARS.

Government geologists have again entered the international guessing contest on how long the nation's supply of coal will hold out. The date which is fixed in their latest bulletin is the year 2040 A. D. This is made public in a report of the United States Geological Survey. It deplores also the waste of coal in mining.

"Waste in mining," says the report, "loses forever about one-half as much coal as is marketed. This half is either left in the ground in thin beds or in the shape of pillars to support the roof. Coal has been extensively mined in the United States for not much more than half a century, but the consumption is increasing so enormously that if this increase should continue all the easily accessible coal would be exhausted by the year 2040 and all coal by the middle of the twenty-first century. It will, of course, not continue at such a rate, for the increasing scarcity will raise prices and check consumption. Water power, too, will undoubtedly take its place.

A WORD FOR THE COAL MAN.

The poor coal dealer is held up to the public contumely as the individual who is responsible for our misfortunes and is to be made the scapegoat. We hold no brief for the coal dealers and have no more kindly feeling for them as a class than we have for the iceman in the summer or any other of the pestiferous breed of individuals who cater to our needs with nefarious intent to share in our weekly stipend. But even the coal dealer is human and as such is entitled to live on this earth without being made a pariah like the hangman or being pointed to with the finger of scorn as the one single author of our woes.—*Reno, Nev., Gazette.*

Fairs and markets were first instituted in England by Alfred, about 886.

NEW COAL TRADE ENTERPRISES

Mounds Ice & Coal Company, Mounds, Mo., dissolved
Fernwood Coal Company, Ramey, Pa.; capital \$12,000.
Imperial Coal Company, Elkhart, Ind.; capital increased to \$100,000.

Midland Coal and Coke Corporation, Wilmington, Del.; capital \$500,000.

Hamilton Coal Company, Hamilton, O.; capital increased from \$6,000 to \$10,000.

Hometown Coal Company, Hometown, Summit county, O.; capital increased from \$6,000 to \$10,000.

Pittsburg Big Muddy Coal Company, Marion, Ill.; capital \$50,000. Incorporators—Sam T. Brush, John Colp, M. D. Colp.

American Coal Company, Boston, Mass.; capital \$50,000. President, J. Rosenthal, Boston; treasurer, P. C. Coblenzer, Roxbury.

Central Coal and Land Company, Denver, Colo.; capital \$100,000. Incorporators—J. J. May, C. M. Smith, J. H. Robinson.

B. B. Coal Company, Canal Fulton, O.; capital \$10,000. Incorporators—Peter J. Blank, S. C. Biller, L. G. Blank, William J. Blank.

Merchants and Miners Coal Agency Company, Boston, Mass.; capital \$50,000. Incorporators—A. A. White, A. White, F. C. Dowd.

South Park Coal Mining Company, Canon City, Cal.; capital \$200,000. Incorporators—John Arthur, Charles Swanson, George R. Cassidy.

Simons Coal Company, Portsmouth, O.; capital \$10,000. Incorporators—L. P. Simons, Ralph Knowles, W. R. Fee, E. E. Knox, O. W. Newman, J. J. Boushartz.

New York and West Virginia Coal and Coke Company, Uniontown, Pa.; capital \$100,000. Incorporators—H. O. Robinson, Richard W. Dawson, W. H. Martin.

W. J. King Coal Company, Newark, N. J.; capital, \$125,000. Incorporators—W. Irving King, New York; Charles L. Young, Deal, N. Y.; George D. Mulligan.

Consolidated West Virginia-Ohio Coal Company; capital \$300,000. Incorporators—E. Dale Field, James H. Field, Uniontown, Pa.; Charles E. Wilson, Dunbar, Pa.

Andrews-Tinsley Co.; successor of W. K. Andrews Coal Company, Roanoke, Va.; President, W. L. Tinsley; vice-president, W. K. Andrews; secretary and treasurer, E. W. Tinsley.

National Nosmock Company, Dayton, O.; capital \$50,000; to manufacture a substitute for coal. Incorporators—Wilbur C. Smith, Wm. Agnew, J. F. Duncan, G. W. Snook, H. L. Myer.

Mansfield-Darragh Company, Fairmont, W. Va.; capital \$25,000. Incorporators—Paul C. Mansfield, Clyde E. Darragh, Hamilton, O.; C. E. Hutchinson, Justus J. Ross, Fairmont, W. Va.

Athens & Pomeroy Coal & Land Company, Athens, O.; capital \$50,000. Incorporators—H. D. Henry, Martin Walsh, Bart Davidson, C. I. Martin, L. G. Worstell, of Athens, and John Martin, of Beaumont, O.

National Exploration and Development Company, St. Louis, Mo.; capital \$60,000. Incorporators—H. P. Ammeling, William Wehrenbrecht, Edwin Wagner, E. R. Cowen, Charles H. Morrill, George H. Dougherty, M. E. Croak.

Star Hill Coal Mining Company, Belleville, Ill.; capital \$2,500.

Sioux City Coal Company, Sioux City, Ia. G. D. Reilley and others.

Novelty Brick and Coal Company, Newcomerstown, O.; capital reduced from \$175,000 to \$150,000.

Pontiac Ice and Fuel Company, Pontiac, Ill.; capital \$30,000. Incorporators—H. C. Jones, I. L. Bancroft, Jacob Berry.

Marcy Brothers & Co., Belmont, N. Y.; capital \$10,000. President, Robert Marcy; treasurer and clerk, Richard Marcy.

Joseph Baum Co., New York, capital \$10,000. Incorporators George T. Rogers, Devaux Powel, Glenn M. Congdon.

Brownsville Coke Company, Uniontown, Pa. Incorporators—I. W. Seamons, Harold W. Seamons, James W. Abraham.

Nolan Coal Co., Reading, Pa., capital not mentioned. Incorporators Clifford H. Price, Charles J. Nolan, Thomas G. Nolan.

Leighton & Campbell Fuel Co., Minneapolis; capital, \$50,000. Incorporators—G. A. Leighton, J. A. Campbell, A. R. Tingdale.

Peoples Fuel and Coke Company, Galesburg, Ill.; capital \$6,000. Incorporators—George R. Sandberg, E. M. Tapper, E. H. Blaich.

Lancaster Landing Coal and Transportation Company, Peoria, Ill.; capital \$20,000. Incorporators—L. E. Robinson, W. H. Quinn, and others.

Colonial Coal and Coke Company, Wilmington, Del.; capital \$100,000. Incorporators—Ralph C. Lupton, William L. Lupton, Harry A. Pierce.

Farmers Grain and Coal Company, Saybrook, Ill.; capital \$10,000. Incorporators—F. M. Merritt, Jacob Froelich, Davidson Gilmore, William Hunter.

K. M. & S. Coal Binder Company, Indianapolis, Ind.; capital \$10,000. Incorporators—David L. Kincaid, Clara B. Kincaid, Rudolph Schimper, Margaret Schimper, Thurston D. Stewart.

Benton Coal Co., Chariton, Ia. Incorporators—W. H. Holmes, Harvey Whitesides, O. A. Scales, Wm. Schreck, U. G. Berg, David Hupp, Ward Carpenter, Dan Myers, Irwin Myers.

Pocahontas Smokeless Coal Company, Welch, W. Va.; capital \$50,000. Incorporators—W. E. Deegans, Glen Jean; P. E. Gallagher, St. Albans; O. C. Huffman, Welch; J. G. Vaughan, Welch; John B. Hoffman, Parkersburg.

MINERS' OFFICER A SLAYER.

Albert Ryan, organizing secretary of the Western Federation of Miners, is a prisoner in Los Angeles, Cal., charged with killing H. E. Snyder, a mechanic, in a crowded hotel corridor. Two other men, Otto Miller and Mike Lopez, are at the receiving hospital suffering from bullets fired by Ryan. It is believed that Miller will not recover. Miller, with whom Ryan had quarreled, was shot while reading a newspaper. One of the shots meant for Miller killed Snyder. Lopez was struck walking on the street. Ryan attempted to commit suicide.

WHEN SOME THINGS MADE A START

- Padlocks were invented in 1540.
 Pumps were first invented in 1245.
 The poll tax was first levied in 1380.
 Anthems were first introduced in 386.
 Pens were first made from quills in 635.
 Anchors (of ships) were invented in 578.
 Raw silk was first made in China 150 B. C.
 Singing was established in church 67 A. D.
 Algebra was first known in Europe in 1494.
 Shillings were first coined in England in 1505.
 The British Museum was established in 1753.
 Scenes were first introduced in theaters in 1533.
 Satellites were first discovered by Galileo in 1608.
 Purgatory was invented in 250; introduced in 511.
 The solar quadrant was introduced at Rome 260 B. C.
 The first Christian altar in Britain was erected in 634.
 Paper was first made of cotton in 1000; of linen, 1300.
 The navy of England was established by King Alfred.
 The art of sculpture in marble was discovered 873 B. C.
 Air balloons were invented by B. Gusnido, a Jesuit, in 1729.
 The first Sunday School in England was in January, 1784.
 The policy of insurance was first used in Florence in 1569.
 The Chinese mode of printing from tablets was invented in 930.
 Patents of nobility were first granted by Philip I, of France.
 Organs were introduced into churches by Pope Vitalian I in 683.
 First settlement of New England, at Plymouth, Nov. 10, 1620.
 Parchment was invented by King Attalus of Pergamus, 198 B. C.
 The spherical form of the earth was taught by Thales 640 B. C.
 The first Reformation was set on foot by John Wicliffe in 1370.
 The first railroads in England were in 1650: first upon iron in 1776.
 The sealing of writings was first introduced into England in 1085.
 Signals at sea were contrived by James II, when Duke of York, in 1665.
 The first ground enclosed in England for a park was at Woodstock in 1123.
 The earliest astronomical observations recorded were at Babylon, 2250 B. C.
 Coats of arms became hereditary in families about the end of the twelfth century.
 Orbits of the planets were first settled by Doerfel, a Saxon clergyman, in 1681.
 Needles were first made in England by a Negro from Spain in the reign of Mary.
 The lunar eclipse was observed with accuracy at Babylon 720 B. C. for the first recorded time.
 The first pins were used in England, replacing wooden skewers theretofore used by the women, in 1543.
 Public Records were first regularly preserved and kept by order of Edward I, 1100; the earliest in English is dated 1415.
 The art of painting was introduced at Rome from Etruria 201 B. C.; painting in oil was invented at Bruges by Van Eyck in 1410.
 Coin was first used in Britain 25 B. C.
 The Feudal law was introduced in 1070.
 The curfew bell was established in 1068.
 Gold was first coined in England in 1257.
 Clocks were first used in Rome 158 B. C.
 The first land tax in England was in 891.
 Banks were first established in Italy in 808.
 Church-yards were first consecrated in 217.
 Bombs were first invented at Venio in 1588.
 Chimneys were first built in England in 1200.
 Coaches were first used in England in 1155.
 Coffee was first brought to London in 1652.
 The Code of Justinian was published in 529.
 Christianity was introduced into Britain in 60.
 The episcopacy was first introduced before 100.
 Galvanism was discovered by Galvani in 1790.
 Gunpowder was first made in England in 1561.
 The Bible was first printed in English in 1539.
 Cloth was first made in England at Kendal in 1390.
 The seaman's compass was invented in China 1120 B. C.
 The Romish Christians were first called Catholics in 38.
 Forgery was first punished by death in England in 1634.
 The first comedy acted on a stage was at Athens 562 B. C.
 Linen was first made in England by Flemish weavers in 1253.
 The Doomsday Book was begun in 1080; finished in 1086.
 The first public library was founded at Athens 526 B. C.
 The first settlement of American Negroes in Liberia was in 1820.
 The Bodleian Library was founded by Sir Thomas Bodley in 1598.
 Dieu et mon Droit was first used as a motto by Richard I in 1194.
 America was discovered by Christopher Columbus October 12, 1492.
 The Order of the Garter was instituted in England April 23, 1340.
 The first cotton was shipped from the United States to Liverpool in 1784.
 Bells were invented by Paulinus, Bishop of Nola, in Campana, about 400.
 Cadmus carried Egyptian letters into Greece and founded Thebes 1493 B. C.
 The title of Christians was first given the disciples of Christ at Antioch in 40.
 The sign of the cross was first used by Christians as a mark of distinction about 110.
 The College of Cardinals was founded by Pope Paschal I, in 817; began to elect Popes in 1160.
 The first leap-year as now known was 4 A. D., having been every three years previous to that time.
 Lithography was discovered in 1808; introduced in England in 1817, and in the United States in 1828.
 Figures, in arithmetic, were introduced into Europe from Arabia in 991: till then letters had been used.
 Circulation of the blood, first asserted by Michael Servetus, a French physician, in 1533, was confirmed by Harvey in 1638.
 Gazettes (so-called from a small coin, gazeta, paid for reading them) were introduced into Venice, 1531; France, 1631; Leipsig, 1715; Amsterdam, 1732; The Hague, 1735; Cologne, 1756; Lower Rhine, 1764.

MAP OF COAL LANDS OF VAST PROPORTIONS

The most notable map ever drawn up in the pursuit of the coal and coke business in its many years of existence is the comprehensive one that is being completed in the offices of James B. Hogg, the civil and mining engineer, of Connellsville, Pa. The map is for the private use of John W. Boileau, the coal expert of Pittsburgh, who has handled the sixty million dollar coke merger so successfully. Into the lines of the map which covers over 9,000 square miles of rich coal territory, has gone thousands of dollars worth of work accomplished on smaller mappings, and the result of 20 years of expert study of the coal and coke situation on the part of Mr. Boileau. He has turned all his valuable mappings over to Mr. Hogg, who has supplemented the work by those maps and tracings from his own wide experience in the business.

"Mr. Boileau's work has assumed such a magnitude in the handling of coal lands," said Mr. Hogg, "that it became absolutely necessary for him to have a quick and concise, as well as entirely complete, reference by which he may compare the value of different coal fields and their means of reaching the markets, that he commissioned me to make this large map. It is compiled from a great mass of different maps which Mr. Boileau has collected in his notable career as a coal expert for perhaps 20 years. The map shows

the streams, areas of fields and their relations to the streams, trolley lines and steam railways, and also shows the relation of the crop line of coals, the Pittsburg in Pennsylvania and the Freeport in West Virginia."

The map depicts the territory described by a quadrangle within lines through Pittsburg on the north to Weston, West Virginia, on the south, and from Sistersville, Ohio, on the west to the Maryland State line on the east. Physically, geographically and economically it pictures the resources of an area 108 miles long and 84 miles wide, or over 9,000 square miles of mineral wealth of the highest quality. It is scaled to one mile to the inch and the map, in sections, measures 7x9 feet in dimensions. The work on the map has been in the charge of B. F. Hofacker, of Mr. Hogg's force of engineers and draughtsmen, for over two months and Mr. Hofacker has worked day and night on it, frequently having as many as four men assisting him.

The map will be tinted to show the different fields and holdings, and while a very valuable general map, and one almost impossible to duplicate without much time and great expense, is also a beautiful exposition of the art of the expert mapper.

Mr. Boileau states that the map is being made for him individually. He is engaged in the purchase and sale of coal properties throughout the territory covered by the map, and he deems it a valuable accessory to his business methods well worth its cost to him.

The art of dying woolen cloth was introduced into England in James II's reign.

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EIGHT LOCKS

CAPACITY 1,000,000 TONS

Johnston City Coal Co.
 PRODUCERS OF
Carterville Coal
 Old Colony Bldg. CHICAGO

MASTIN & SHERLOCK, Attorneys-at-Law,
 1106-1108 Fisher Building, Chicago, Illinois,
 PUBLIC NOTICE is hereby given that on the eighth day of May, A. D. 1909, at the hour of 11:00 o'clock A. M., pursuant to due notice, a Special Meeting of the Stockholders of the Deep Vein Coal & Coke Co., was held at the office of the Secretary, 1108 Fisher Building, City of Chicago, Cook County, Illinois, and a resolution unanimously adopted in favor of and providing for the voluntary dissolution of said corporation, and directing the officers of the corporation to abandon the corporate enterprise, and to surrender the charter, franchises and corporate name of the corporation; and that all of the corporate debts have been fully paid, and the corporate assets and property of said corporation distributed among the persons entitled thereto, as provided by law.
 Dated, Chicago, Illinois, July 10, 1909.

JOHN PYNCHON,
 M. C. PUTNAM,
 GEO. C. MASTIN,
 Directors.

July 13-20-27

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PHONE HARRISON 521

COAL LANDS AS COMMONS.

An important opinion by Justice Porter at Wilkes-Barre, Pa., was in the case of Francis and Joseph Millum against the Lehigh & Wilkes-Barre Coal Co., in which the supreme court modifies its former ruling, or rather makes a finer distinction as to accidents on company property. The justice holds that when the owner of property permits its use by the public as a common or playground, his duty is to use reasonable precautions to protect the public from the operation of dangerous machinery that may be upon it. The justice says:

The dividing line between the principle upon which Thompson vs. B. & O. R. R. Co., 218 Pa., 449, was based, and that upon which Henderson vs. Refining Co., 219 Pa., 384, stands may be a narrow one, but the distinction in principle between them, may be readily traced. In the former case the child who was injured, was considered as an intruder and a trespasser upon the property of the defendant company. In addition to this he was injured through the action of his playmates, rather than by reason of any machinery which the defendant company set in motion. Under the circumstances of that case, it was held that the property owner was not liable for the injury to an intruder, caused not merely by the condition of the premises as they were, but chiefly by the carelessness of other children, who were also intruders and intermeddlers.

Upon the other hand, in Henderson vs. Refining Co., 219 Pa., 384, it was considered that the child who was hurt by coming in contact with dangerous machinery, left unguarded, was lawfully upon the premises; that the defendant company in that case, which owned both the lot where the dangerous machinery was erected, and the dwelling house on each side of it, had, by placing a gate in the fence upon

one side, and a door in the house upon the other, each opening upon the lot in question, and in addition, by permitting the lot to be used for passage between the two houses, and as a playground for the children living in them, thereby extended to the tenants in the houses, to their families and guests, an implied permission.

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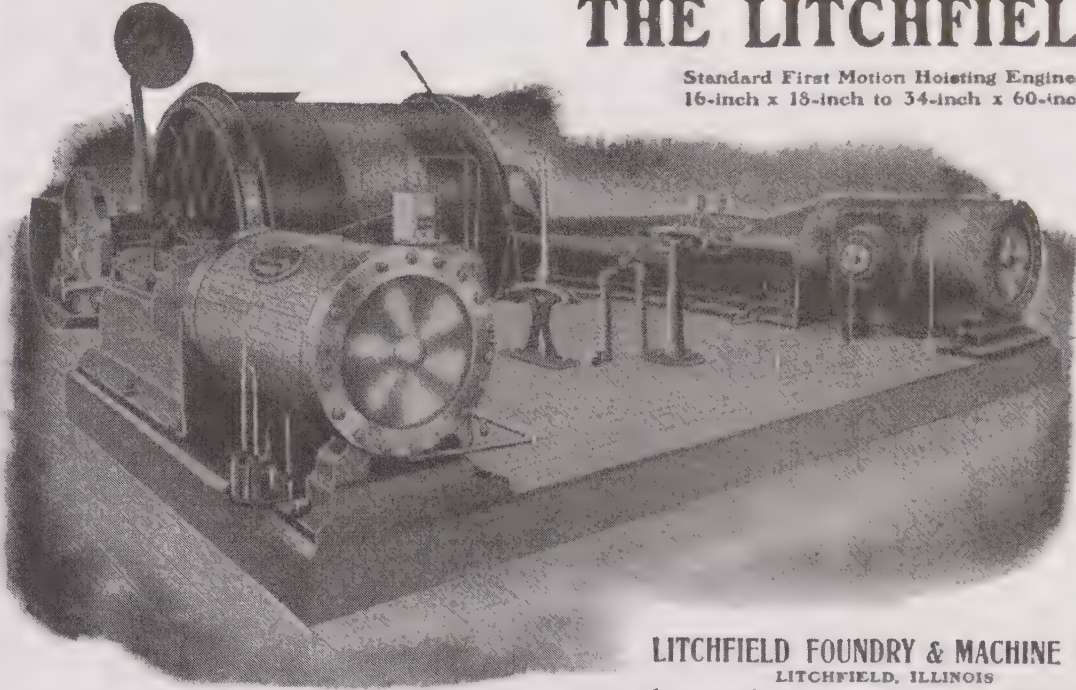
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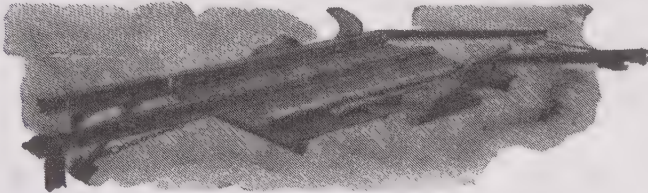
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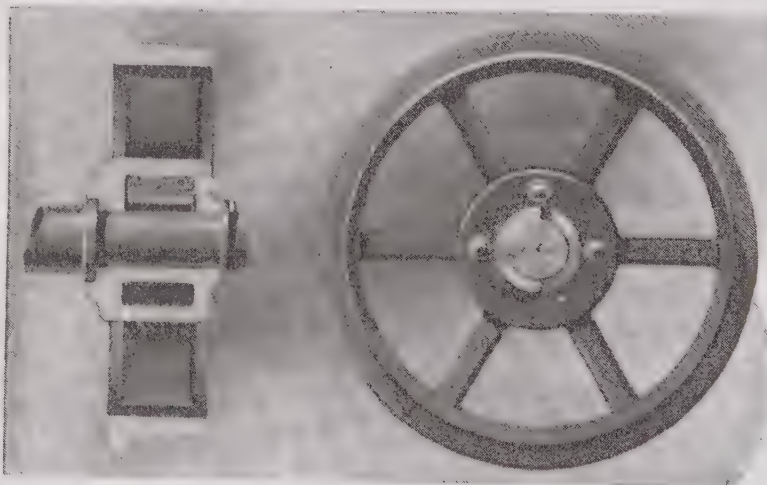
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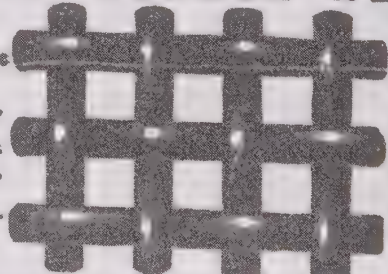
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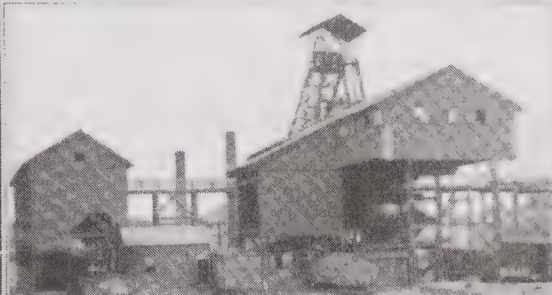
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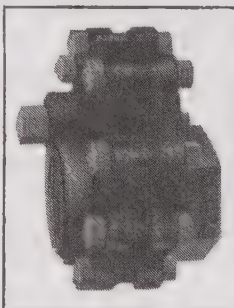
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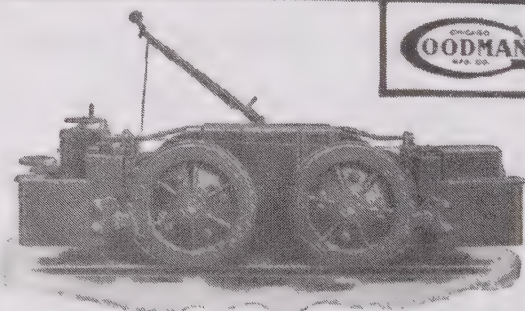
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FUEL

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Vol XIII. No. 14.

CHICAGO, ILL., AUGUST 3, 1909.

Price \$2 Per Year.

THEY MAY CALL FOR COAL AND NOT GET IT

People of the Great Northwest Have Been Neglecting the Warnings of the Railroads That There Will Be a Shortage of Cars When Crops Begin to Move and a Coal Famine is Among the Strong Probabilities.

Whenever a shortage of coal occurs in the country, and it usually is in the Northwest when it does occur, it is always to a greater or less extent the direct fault of the consumer and of the retail dealer. Every few years the coal famine is made the leading topic in the newspapers and the railroads and the coal operators are largely held responsible. These two factors, however, have since the most recent case of that sort gone to considerable expense every year in warning consumers and dealers of the situation to such an extent that should another shortage be suffered the railroads could point to the fact that they had vainly urged the people to prepare themselves for the winter. The year following the coal shortage of 1906-7 this warning was heeded to a great extent and coal supplies were better than for many years prior thereto. But the winter proved a mild one for most sections and those who trusted to "luck" and waited had the best of the argument.

Still a year later the depression had struck the country, and the winter being but an ordinary winter, the falling off in the demand was so noticeable that a modest supply of coal sufficed. The railroads had lost so heavily in the amount of traffic handled that cars were plenty, and even in the absence of new cars to replace the worn-out cars, the car supply was ample to the demands of the business done. The coal famine of 1906-7 has now been forgotten and people have become convinced that their outcry against the railroads and the "coal barons" has settled the question. In consequence, the demand for coal continues barely nominal, despite the reviving of industries and the splendid crops that await transportation to market. Railroad men trained in the business of planning ahead for their lines see only the certainty of a great car shortage that will bring a coal famine in its train with absolute certainty.

* * *

Railroad men who have for years kept themselves informed as to crop conditions as a matter of necessity, say that the countless acres of the great West are groaning with the bounty of the harvest, and that despite the fluctuations that grain speculators are enabled to bring about, there is almost a record crop of wheat all through the great wheat-raising States. In the West, in the great Southwest, in the vast prairie country of the Northwest, the wheat crop is wonderful in its extent, and such as will take every car that every railroad can bring into serve to handle the grain. The very people who have these vast crops have failed to take any precautions towards laying in their winter fuel, and will be the sufferers by the shortage of cars which is certain to face them when the crops are to be moved. For three years the railroads have been sounding the warning that a coal famine can only be prevented by early purchasing of fuel. They have sent out warning notices, have had their agents travel untold thousands of miles in order to try and

arouse the people to the necessity of regularly stocking up with coal before winter sets in. They have shown that July and August are the ideal months for moving coal, not only because cars are then available, but because the coal can be transported in better condition and less subject to deterioration by unfavorable weather conditions. The purchaser can better move the coal from the car and store it, and, indeed, there is no single reason why the coal should not be bought at that time and all danger of winter famine obviated.

* * *

But the time passes on and finally the time comes when crops must be moved and the railroads have to move them and have no time to do anything more than give the farmers their attention. Farmers find that the shortage of crops has existed only in the excited imagination of the men manipulating the "corner," and the fullest capacity of the railroads is demanded for the moving of the crops. This year has been no exception to the rule, for the railroads begun their work earlier than usual, knowing that the business revival would also require more cars for its handling than the two past years. But the coal shippers, dealers and consumers, though knowing of the large crops and of the certainty that the equipment of the railroads will be tested to its fullest extent, have paid little attention to the warnings. They have laughed and referred to the restrictive legislation with the apparent confidence that somebody somehow is going to have the railroads do impossible things in the event of a coal famine. There is but one course to be pursued by the wise dealer, and that is to get the winter's coal supply in now, to fill their yards and bins, and put themselves in readiness to meet the winter demand. If they do not take such ordinary precautions, the people are learning that the railroads are not altogether to blame, and that their retail dealer, by ordering his coal in time, can prevent any suffering for want of fuel in the coldest weather. It is easy enough to telegraph the operator or jobber to rush coal at once, and so attempt to put the blame on them for failure to ship promptly, but every intelligent consumer is learning that coal can not come great distances in a day, and that if they can not get coal the fault is in all probability with the man who undertakes to supply his community. It is the dealer who must get busy. Wherever there are regular coal dealers in business it has become almost impossible for the private consumer or for a number of private consumers to order a car direct. The duty of the dealer is therefore more than ever to see that the people of his community get coal when they want it. Otherwise he is paying the way to having selling agencies take the place of dealers in many places, the wholesaler or producer keeping charge of matters for themselves. There is no reasonable excuse for failure to act. Especially in the Northwest, where the

famine is usually worst and longest in continuation, have the roads tried to impress, and are still trying to impress upon coal dealers the necessity that exists for them laying in their winter supplies of coal during this slack season of the year, in order to avoid embarrassment from delay in deliveries after the crops begin to move in volume, and when the roads are likely to have their equipment all in use for other purposes. Following the practice of several years past, the Great Northern road has sent out a circular letter to the coal dealers on its lines, calling their attention to the urgency which exists for immediate action on their part. In this circular the road says:

"We desire to impress upon all concerned the importance of placing orders for and securing movement of coal during the months of July and August when railway equipment is available in order to prevent a shortage of transportation facilities this fall.

"The indications point towards an exceptionally heavy grain and other traffic movement and shippers, dealers and consumers of coal should give this subject of prompt placing of their coal orders and filling to full capacity available storage space very careful consideration, as transportation facilities will doubtless be very heavily taxed and car shortage created unless as much coal as possible is moved from the docks before the heavy fall business is upon us."

Every coal carrying road has taken similar action. The newspapers are acknowledging that the railroads are doing everything possible to awaken the people of the threatened sections, and, as the Chicago Tribune says, "If another famine in fuel should come there will be less sympathy for the people who clamored for the coal on the distant docks which could not be secured because of the failure of the railroads to furnish cars." If the consumer would demand the coal of the dealer, and made the dealer keep after the shipper, the coal trains would be going till the want was supplied. The shipper would be only too glad to do his part, and the operator is waiting for a chance to get out more coal, all of which he wants to sell.

Foreseeing that they are not going to be able to meet orders when the grain begins to move, many shippers are already figuring on advancing prices within a couple of weeks. Coal will not sell so near the cost of production when the car shortage comes, and the man who digs and handles the coal will get a chance to partially recoup himself for the losses of the many months past. Coal is selling too cheap for people to appreciate its value, anyway. They seem to have no respect for coal when it is selling at what it costs to produce it. Prices will go up all right when the cars are scarce. The wise dealer had better make a noise like a hoisting engine.

TO OPEN BIG TENNESSEE COLLIERY.

Preparations are now being made for the permanent opening and operation of the coal mines in King's Cove, near South Pittsburg, Tenn., which New York capitalists recently purchased. Capt. G. W. Crozier is in active charge of the work of making entries and erecting cottages for workmen. Orders for material for buildings, etc., are now being placed. It is stated that in a few days construction work on the extension of the railway track to the mines will begin. Two routes, one by way of King's Cove, from Richard City and the other by way of Sweeten's Cove, from a mile north of South Pittsburg, are being considered. The Sweeten's Cove route abounds in mineral and timber, and a strong effort, by industrial property owners along this route, is being made to induce the road to build to South Pittsburg.

The Lovington, Ill., coal mine will shortly begin to hoist coal.

SALE OF ANNUITIES TO CANADIAN WORKMEN

Following are some of the details concerning the new act passed by the Canadian parliament, establishing a bureau for the sale of annuities to workingmen:

In the establishment of the bureau, the government is not involved in any pecuniary responsibility beyond the mere cost of furnishing the machinery, which will not exceed \$25,000. The smallest annuity that can be purchased is \$50 and the largest \$600. Except for certain reasons, ordinary annuities are payable till the annuitant has reached the age of 55. They can not be seized for debt, are nontransferable, while money once paid in on account can not be withdrawn. If payments are interrupted by sickness, loss of employment, or any other cause, they may be renewed at any time. Payments may be made weekly, monthly, or yearly, or in lump sums, as is most convenient.

A workingman who at the age of 30 begins to pay 25 cents a week obtains at the age of 55 an ordinary annuity of \$47, or if he continues his weekly payments till he is 70 he thereafter receives nearly \$200 annually. For the same weekly payment begun at 20 he receives at 60 an annuity of \$130, and if he leaves it on deposit with the government on the understanding that it shall be employed to purchase additional amounts of annuity to commence at 65, he receives a further sum of \$80, making his total annuity at 65 \$210. If, when he is 20, he begins with a lump sum of \$10, followed by weekly payments of 25 cents, with lump sums of \$10 every 5 years, until he is 60, he is entitled to an annuity of \$151; but if his employer adds \$10 a year the annuity at 60 becomes \$253, and, in the event of the annuitant's dying, say at 50, his heirs receive \$1,215; or if the employee pays 25 cents per week and the employer \$10 a year, the annuity at 60 is \$231, and if the annuitant dies at 50 his heirs get \$1,110. A man may at 40, by a single deposit, pay arrears of premium between 20 and 40 and complete the contract as if he had entered at 20. Employers of labor may contract for annuities for employees, and fraternal and benevolent societies for annuities for their members.

MANY KILLED IN SPANISH MINE.

Rescuers have taken thirty dead, twelve dying and forty-five injured from the collapsed galleries of the Belmez coal mine, near Cordova, Spain. It is believed that 660 miners are still entombed in the galleries which were cut off from the surface by the collapse of the sides of the main shaft. The disaster was caused by an explosion of fire damp, which occurred at a time when the full force of miners was at work in the galleries, and practically all of them were penned behind huge walls of coal which slid down from the galleries following the explosion. Many of the men were caught and crushed under the coal slide. The dead and injured that have been removed were buried under a huge pile of coal at the mouth of one of the galleries.

NEW COAL ROAD PROPOSED.

A new railroad branch leading into the coal fields of Somerset county will be undertaken, it is said, by the Pennsylvania Railroad Company, in the near future, as a tapper for large coal tracts and a saver of motive power in moving freight east. The road will open up about 40,000 acres owned by the Berwind-White Coal Mining Company and this firm has been negotiating with the railroad officials for some time endeavoring to interest them in the proposition.

MATTERS OF INTEREST IN ILLINOIS FIELDS

What One Southern Paper Thinks of the Great Waterway—Many Passed the Recent Examination Successfully and Are Ready for Responsible Positions—What is Going On At Some of the Mines.

Herbert Knox Smith, in his waterways report, Part II, mentions the Pittsburg coal traffic on the Mississippi as constituting more than one-half of the total traffic on that river, and regards it as a substantial business. There are signs, however, that even the coal barging business will not exist much longer, as the railroads are competing with it on equal terms now, and may be expected to do better in the future. It was a startling development of possibilities in this line when the bids for supplying the Southern Pacific Railroad at Algiers, opposite New Orleans, were opened some days ago. There were bidders from everywhere, including the Pittsburg barge line men, and the general thought was that the river transportation was so cheap that Pittsburg would easily get the contract; but the outcome was different. The lowest bid was from the Kentucky mines, the coal to be transported altogether by rail, with the added expense of ferrying the coal from the left to the right bank of the river at New Orleans.

The *Mobile Register* argues that this incident shows that there is a possibility, nay, a probability, that by the time the river is improved for the benefit of the coal traffic there will be no coal traffic for the river. In reaching this conclusion, however, FUEL does not think that the Register is correct. With an improved waterway, these great and growing markets would be so opened to Illinois coal that the tide of coal shipment would be turned strongly in that direction. Greater transportation facilities would mean cheaper transportation rates, and it is a well known fact that wherever there is water competition the transportation cost decreases and the volume of trade both by rail and river increases largely and rapidly. Let us have the river for coal and the railroads for the growing freight that demands quicker handling.

Many Applicants Pass Examinations.

The successful candidates for certificates as mine managers, mine examiners and hoisting engineers, at the examination held recently by the Illinois State Mining Board, are as follows:

Mine examiners—John Smiles, Farmington; William Nesbitt, Farmington; Isaac Price, St. David; Frank Sergeant, Jr., Belleville; William Wagoner, Sesser; John Hoyer, South Wilmington; Thomas Williams, Harrisburg; M. J. Carraher, Benton; J. J. Murphy, London Mills; William B. Bland, Benton; Clyde Stark, Benton; Joseph Grieve, Belleville; William B. Nelson, Belleville; Edward Goff, Harrisburg; George Lindsay, Springfield; Charles Pulliam, Galatia; David Griffith, Streator; Ferdinand Cresswell, Harrisburg; Paul Flynn, Lincoln; John Muncie, Virden; Oscar Menzel, Lincoln; James J. Lane, Benton; Edward English, Virden; Joseph Cooper, Benton.

Mine managers, first class—Alfred M. Lee, Sunfield; Thomas Short, Pekin; Richard Betson, Farmington; Henry Vonach, Cuba; Herman Koepfel, Peoria; Robert M. Medill, Westville; Henry Beetler, Pekin; Herman Idle, Farmington; W. G. Halbert, Danville.

Mine managers, second class—Thomas A. Curry, Marion; C. L. Williams, Briar Bluff; John Hampton, New Burnside; John Sellers, Aley; Andrew Laird, Littleton; Virden Wagstaff, Murrayville; Edward Dawson, Shelby-

ville; Martin Kluge, Belleville; Frank Scher, Catlin; Albert Kipling, Colchester; Walton Armitage, Exeter.

Hoisting engineers—Bert Melins, St. David; Fred Josseck, Springfield; M. M. Murphy, Canton; Louis Jenkins, Peoria; George M. Temple, Springfield; William F. Meni, Collinsville; Thomas Erisman, Springfield; Mosiah Jones, Taylorville; Frank Dalhouse, Beckemeyer; Edward Rothenberger, Spring Valley; John Miller, Streator; Chester W. Kidd, Fairmount; Henry Smith, East Peoria; W. T. Vitt, Mt. Olive; Naaman Barrow, Willisville; Peter Jaskoski, LaSalle; E. T. Kell, Mt. Vernon; George Hughes, Harrisburg; N. M. Burke, Danville; F. A. Wilkinson, Marion; J. A. Mundell, Benton; James P. Shaffer, Troy; Stacy Ritson, Farmington; Thomas W. Durham, Glen Carbon.

Coal and Oil in Illinois.

In 1907 Illinois stood third in the class for oil production, and in 1908 it became necessary to curtail the production because of the insufficient piping facilities for carrying off the product. The total production for the year is given as 33,685,106 barrels. With increased piping facilities this could have been increased to four million according to the belief of the oil men.

While the figures on coal have not been completed, the figures already canvassed show a decrease amounting to 7.2 per cent. The coal mined is given as 47,608,161 tons, with a total value of \$49,936,159. The reduction in pig iron production was nearly a million tons.

A notable change took place in the rank of the largest coal producing counties from 1907 to 1908. In 1907, eighteen counties produced over 1,000,000 tons, while in 1908 only sixteen counties reached that mark. Marion and Peoria counties dropped out of the list. In 1907, Franklin county ranked fifteenth with a production of 1,306,966 tons, but last year it jumped to eighth place with a production of 2,187,383 tons. Bureau county, which stood ninth in 1907, dropped back to twelfth place last year.

New Mine Near Staunton.

Robert W. Campbell, formerly superintendent of the Lovington Coal Mining Company, who recently resigned after sinking the Lovington mine, has completed a deal with the heirs of the Berrey estate near Staunton, purchasing a tract of land located on the C. & E. I. railroad, about five miles southwest of Decatur. Mr. Campbell represented a syndicate of Chicago capitalists, who will finance a coal mine, which will be sunk on the property purchased.

The land is a good site for small town, and as soon as the mine is under headway, the ground will be laid out in town lots, and a town, which probably will be named "Berrey," will be started. The price paid for the land was \$85 an acre. Also 2,300 acres of coal rights on land adjoining the town site and an option on 1,000 acres was secured. Mr. Campbell will be made general manager of the project, and A. E. Hanson, who recently resigned his position as secretary of the Lovington Coal Mine Company, will be secretary of the new coal mine company.

The new company will be capitalized at \$150,000 and over \$100,000 of the stock has already been sold. Although

the depth of the vein of coal is not exactly known, it is thought to be over nine feet, and the quality the best of any mined in the State. Prospecting will begin the first of the week when the exact depth of the vein will be known.

Lower Rates Promised to Elgin.

Reduction in freight rates on coal to Elgin are promised, and would be welcomed by manufacturers and merchants here, as well as citizens generally, who think they have been compelled to pay more for their coal than in any other city in this region, on account of alleged discrimination upon the part of the railway companies in the matter of freight rates. Thus, with coal cheaper, the Elgin citizen would save not only on fuel, but upon everything he buys from others whose coal expense has been reduced. The manufacturers will be especially affected, but the benefits will be enjoyed by all in case of such reduction.

The Mt. Pulaski Coal Mine.

Edward Buckley, manager of the Sangamon Coal Company's mine at Springfield, and William Walsh, connected with the Capital Coal Company, also located at the capital city, have submitted a proposition which in all probability will result in the mine at Mt. Pulaski, Ill., passing into their hands. It depends on the support received from the business men and citizens generally of Mt. Pulaski. It is said that the mine has lacked competent management in the past, lack of experience handicapping those in charge of the enterprise. The proposition now submitted by Messrs. Buckley and Walsh is that they purchase the mine outright, paying the purchasing price, but they ask the citizens of Mt. Pulaski to subscribe bonds, the proceeds of which will be used to place the mine in first class condition. It is proposed to issue the bonds as a first mortgage on the property, with interest payable semi-annually at 6 per cent. They propose to increase the output of the mine, employing about 125 men at the mine, whereas a dozen miners have usually found employment when the mine was in operation heretofore. This makes it a more interesting proposition to the Mt. Pulaski people.

To Sell Big Coal Mines.

The property of the Illinois Collieries Company, which has been in the hands of receivers for two years, will be sold at receiver's sale by order of the court within a comparatively short time. Three of the mines of the company are now in operation, but the others are shut down and preparations are being made to take the property out of the court and restore it to an independent going concern.

The probability is that the bond holders will buy the mines and rights and either operate them through an operating company or lease them at a fixed basis. The property of the company is worth several times the amount of the bonds. In addition to the mines themselves the company owns a large amount of coal lands located principally between this city and Litchfield.

Lovington Mine Needs \$50,000.

The work of placing the outside equipment, engines, and general grading at the Lovington coal mine has been suspended for a couple of weeks, pending a canvass among the stockholders of the company to raise an additional \$50,000 to carry on the work of equipping the mine in an up-to-date manner. This does not mean a shut-down at the new Lovington mine, as between three and four carloads of coal are being mined every day. Only the men employed in the construction work have been laid off for a short time. Over \$300,000 has been spent to date on the Lovington coal mine, and only \$50,000 is needed to make the

project a success. It is necessary to raise this amount among the stockholders, for the reason that the plant cannot be bonded. Under the form of the organization the property is held in trust for the certificate holders of stock, and their claim is the first lien on the property.

The officers and directors of the company are: William Fisher, of Lovington, president; John Benson, vice-president; A. L. Hiser, of LaPlace, secretary; J. C. Stocks and Jerry Duncan, and Attorney J. C. Morgan, of Washington, D. C., directors.

Improving While Times Are Dull.

At the present time, while business is slack, improvements are being made at the plant of the McLean County Coal Company that will cost the management between \$15,000 and \$20,000. Summer, when there is less work than in other seasons of the year, is always the time for improvement work around coal shafts. The mine is now installing a new boiler plant and a new fan. A live steam purifier that carries the same measure as the boiler is being added. It has pans having 1,067 square feet of lime-catching surface, which can be removed when necessary for cleaning. The idea is to purify the water before passing into the boilers.

Death of Thomas Flynn.

Thomas Flynn, a resident of Carlinville, Ill., for fifty years, died at his home here at noon Thursday, aged 75 years. He was a coal miner and followed this occupation most all of his life up to a few years ago. His wife died eight years ago. One son and three daughters survive. They are Mrs. John Penn, of California; John and Miss Margaret Flynn, of St. Louis, and Miss Catherine Flynn, who resides in Carlinville.

Wenona Coal Company's New Chimney.

The Wenona Coal Company has just had built at their coal shaft a large concrete chimney for the boilers, the work being completed the latter part of last week. The chimney is about 100 feet high, the concrete being reinforced with steel rods running up and down, and also around every eighteen inches. It is of substantial construction, makes a nice appearance, and is a big improvement over the iron stacks which have been used at the shaft.

Mine Injunction Case Argued.

Arguments were heard in the Circuit Court at St. Louis a few days ago by Judge Crow for the dissolving of the injunction of the Kolb Coal Company, of Macoutah, Ill., restraining the state, district and Mascoutah officials of the United Mine Workers of America from interfering with the operation of the mine. Attorneys Darrow and Steadman, of Chicago, are representing the mine workers, and Attorney Klingel is representing the coal company. This injunction was granted by Judge Holder last March.

SHORT AND TO THE POINT.

A coal merchant who was a man of few words once wrote to an agent the following brief letter:

Dear Jones:—" "

In due time the agent's reply came as follows:

Dear Mr. Sinclair:—" "

The coal dealer's letter, translated, said: "See my coal on," which is the semicolon expressed verbally.

The agent informed the dealer that the coal was shipped by saying simply: "Col-on."

Small guns were invented by Schwartz, a German, in 1378.

THE ITEMS OF COST IN COAL PRODUCTION

There is no other industry which seems to be so little understood by the people at large as is the production of coal. Even the large buyers and consumers of coal usually labor under the mistaken idea that the margin of profit in mining and selling coal is tremendously large, and it is by no means unusual for the purchasing agent of a large manufacturing concern, or at times of a large railroad, to express the wish that their own business afforded so large a margin of profits. "Why," they often say to the operator, "you pay the miner only so much a ton, and it seems to me that you must more than double your money at the prices we pay."

* * *

The operator, however, would be only too glad to sell his coal at a substantial reduction were the only expense of production the price he pays the miner. FUEL the other day entered the office of a prominent coal operator just after a conversation of this character, and found the operator smiling at the surprise of the departing gentleman whom he had enlightened concerning the various other items of expense at his mine. The original cost investment and installation, the cost of proving the coal lands, the cost of the tippie and mining plant, the interest on investment, taxes and insurance and such other things omitted, considering only the separate items on the monthly cost or labor sheet of a coal company, would stagger the ordinary manufacturer. The wonder would be, after an examination of the cost sheets, which are kept regularly just as are the expenses of any other large business, that the coal operator has anything left, even in good times. It is only by the most careful management and close watch of detail that he can save a profit.

There are a great many items at every step in coal production. The cost at the face embraces not only the mining rate, or the digging expense, but includes also the expenses for cross-roads, for opening walls, pick sharpening, props, etc.

Under the head of haulage comes the expense of face driving, road driving, trapping, couplers, trip-riding, rope engineers or motormen, stablemen, shoers, etc.

Drainage is another essential but costly item, embracing the expense for pump men, water bailers, pipe men, who care for the great pumping plants required for the safety of the mine.

The bottom cost takes in the amounts paid for mine foremen, fire boss, track layers, cagers, empty car handlers, etc.

* * *

What is classified as the underground cost calls for the payment of large amounts for road repair work, grading, brushing, and entry work, as well as occasional other items. In fact, the items here specified are the items that regularly appear on the monthly cost sheets. The multitude of other expenses of an emergency or occasional character, is not included.

Then, there is the top cost, for work above ground. This is made up of the expenses of weighing, dumping, box-car loading, trimming of open cars, switching, cleaning cars, top prop men, engineers, firemen, coal inspectors, railroad track work, repair cost, blacksmiths, carpenters, boiler repair machinists, electricians and laborers.

The supply cost adds its quota to all these. These include pit car oil, repairs to pit cars, mule feed, harness, mule renewals from injuries and death or disability, haulage rope repairs, electrical installation, steam supplies, drainage supplies, hoisting ropes, face props, road timbers, lum-

ber for sundry purposes, dump lumber, box-car lumber, copper wire, rails, pipe spikes, oil, engine oil, teaming, and many other miscellaneous items.

The items appearing on the cost sheet from which these were taken aggregate between sixty and seventy different and distinct items outside of what is paid the miner for the actual digging of the coal at the face. This particular list is taken from the cost sheet of a long-wall mine, but it applies to all mines. The items are not all identical, some appearing here that are not embraced in the cost of running a room-and-pillar mine, but the latter also has many items of expense not incurred by the long-wall mine, so that the list of necessary expenses is about as long in one case as in the other—"sometimes more so."

There is hardly a business in which there are so many large items of expense connected with turning out the product, and none in which the aggregate expense comes so nearly up to the income derived from the business. It is simply another instance of the lack of real information concerning a great industry, that exists concerning any great business carried on in the country. Don't kick on the price. Give the poor coal man a chance.

COAL, THE TRANSFORMER.

A large part of the industry and wealth of Illinois has its basis in work underground. Merely as an agricultural state, both population and wealth would have been far below the present standing. The remarkable change that comes with the exploitation of mineral wealth, in Illinois mostly and sometimes altogether coal, is illustrated in southern Illinois. This oldest part of the state, long unprogressive, practically stationary, dependent chiefly on agriculture, which was decadent through exhaustion of the soil, is taking on new life through development of its mineral deposits, especially the mining of coal, which leads to the extension of railroads, establishment of factories and building of towns. Some of the results are stated by the St. Louis Globe-Democrat, in an article from which we quote the following:

"The last decade has seen Harrisburg grow from a village of 1,000 inhabitants to a thriving inland city of 12,000, with national banks, handsome business blocks, beautiful churches and paved streets. Herrin, laid out but thirteen years ago, is today a town of more than 10,000, and is still growing at a rate hard to conceive. Marion has sprung from 1,200 to 12,000 within the same time, while Johnston City, once but a prairie site and that but a half dozen years ago, is a thriving little place of 6,000, with its modern conveniences and up-to-date structures equal to the pride of many a larger town. Benton, which is the county capital of Franklin, and once ruled the country round with the majesty of 1,000 residents, is now a busy place of 8,000, with the end not yet."

It is shown also that in the group of counties where this transformation is going on the farmers, supplied with markets at their doors, are becoming wealthy; road construction is in rapid progress, and the railroads are competing for the growing business by the construction of new lines.

O, you who have a Mother dear,
Let not a word or act give pain;
But cherish, love her, with your life,—
You ne'er can have her like again!

—Anon.

* FUEL *

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The Cow-Boy's Prayer.

Charles B. Clark of California.

I've never lived where the churches grow;
I love creation better as it stood
The day You finished long ago
And looked upon Your work and called it good.
I know that others find You in the light
That's sifted down through tinted window panes,
And yet I seem to feel you near tonight,
In this dim quiet starlight on the plains.

I thank Thee, Lord, that I've been placed so well
That you have made my freedom so complete;
That I'm no slave of whistle, lock or bell,
Or weak-eyed prisoner of wall and street.
Just let me live my life as I've begun,
And give me work that's open to the sky;
Make me a partner to the wind and sun,
And I'll not ask a life that's soft or high.

Let me be easy on the man that's down,
And make me square and generous with all;
I'm careless sometimes, Lord, when I'm in town,
But never let them say I'm mean or small.
Make me as big and open as the plains,
As honest as the horse between my knees;
As clean as the wind that blows behind the rains,
And as free as the hawk that circles down the breeze.

Forgive me, Lord, if sometimes I forget—
You understand the reasons that are hid;
You know about the things that gail and fret,
You know me better than my mother did.
Just keep an eye on all that's done and said,
And right me sometimes when I turn aside,
And guide me on the long, dim trail ahead
That reaches upward toward the Great Divide.

THE POSITION OF ILLINOIS.

The coal operators of Illinois have for many years been urging on the coal miners' organization and on its members that the unfavorable position of Illinois in the coal industry existed because of the handicap of conditions more exacting than are conditions in other states coming in direct competition with Illinois coal. This has been either denied or dismissed from consideration until very recently, but FUEL is gratified to find a pointed acknowledgment of that fact in a report recently prepared for the mine workers and sent out to them by their own legislative committee—a committee that was arduous during the legislative sessions at Springfield in working for what they deemed to be required in the way of protective legislation. A part of this report is as follows:

"Another matter your committee has had brought to their attention, and that is that we cannot expect to get legislation, no matter for what reason, that will increase the cost of production to the Illinois employer to such an extent that he will not be able to sell the product of his plant in competition with similar products from states where the laws, labor and other conditions allow the employers to produce the finished article and place it on the market at a less cost. Where that condition exists, the only way we can do anything to help ourselves is to get the laws in those states changed or get federal legislation enacted removing it. In some of those states the labor organizations are not very strong and our only immediate hope is through the national legislative bodies, and, assuming that most employers would be satisfied to agree to any reasonable legislation, provided their competitors were placed on the same basis, where a condition can be regulated by a general law, for the reason that it would put all on an equitable basis, it is only fair that it should be provided for in that way. As under such circumstances the power and influence of the international organizations could be used to help get remedial legislation, we believe that arrangements should be made with the international American Federation of Labor at the earliest possible date, for the formation of a plan on a basis by which all of our strength could be utilized in our interest along the lines suggested, and we would recommend that our delegates to the next State Federation of Labor convention come prepared to act on that matter."

In many past joint conventions the miners have suggested that the operators join them in an effort to force the other states up to the Illinois conditions and rates, but this has not been done, and will not be done. Illinois is not in that frame of mind. What the operators of this state want is simply to be put on an equality with their competitors, not to have their competitors penalized through their influence. Conditions in other states have not seemed objectionable to the miners of those states to such an extent that they have seriously undertaken to remedy them. Then why should not these same conditions be made applicable to Illinois where the opportunities for making living wages are, to express it very mildly, just as good as in those other states.

Just what national legislation could effect the cure of the existing inequalities FUEL does not see, nor does the report state, so far as we are informed. To us, the opening paragraph quoted seems to cover the real point in controversy, and to acknowledge the justice of the contention so long made by the Illinois coal operators—"that we cannot

expect to get legislation, no matter for what reason, that will increase the cost of production to the Illinois employer to such an extent that he will not be able to sell the product of his plant in competition with similar products from states where the laws, labor and other conditions allow the employers to produce the finished article and place it on the market at a less cost." And, if we understand the Illinois miner he does not wish to increase the cost to the point that competition will be any further stifled. The competition lacks much already of being free and on equal terms.

But, what we fail to understand is what sort of national legislation is referred to. The sort that most readily occurs to us is the fixing by law, or the privilege of fixing by agreement, the prices at which coal may be sold. In the former, national legislation would fail because it could never take into account the multitude of elements entering into natural competition—healthy competition which no one has any desire to interfere with. The only competition to which any Illinois coal operator objects is that allowed by the unequal conditions prevailing in different competitive fields, conditions that were established and are maintained by the mine workers themselves. What the coal operators of Illinois have been contending for, and will always contend for until they get it, is the right to do business on just such terms as are granted their competitors in other fields where the natural advantages are equal, to say the least, and to enter the world's markets with a product that has been produced so as to allow them as much of a margin of profit as is enjoyed by those competitors from other states.

THE STUDY OF EXPLOSIONS.

The amount of attention being given to the matter of preventing disastrous explosions in American coal mines is bound to work out to the good of the coal producing industry, and a good indication is that the study is not being confined to state and government bodies. The men who are daily in contact with mine life are doing their share. Perhaps many of the remedies suggested locally will prove efficacious in certain mines only, and that while working out the general principles governing explosions, etc., the state-aided bodies will accomplish the greater part of the good. But since conditions vary so largely, there will continue to be a need for special treatment for individual mines, or groups of mines, that can be worked out best by men engaged in the management of those mines or localities.

One of the latest reports of a means adapted to lessening or preventing explosions is that for which a patent has been asked by Robert C. Dawson, assistant superintendent of the Beaver Coal and Coke Company at Wampum, Pa., and Harry Bartow, a merchant at Deanor, Pa., in Somerset county. Mine foremen who have examined the process speak well of it. The plan, briefly, is to take the gas from the mines by the suction method, and then to utilize the gas so drawn from the mine for lighting and power purposes. The gas, under this method, will not be driven out or pumped out, but a pipe line would be installed, running under the floor of the mine or embedded in the walls.

Every 40 or 60 feet would be connected an upright pipe leading to the side wall of the heading, and from this upright would be extended an arm of perforated pipe through which the gas that accumulated along the roof would be drawn. Through another pipe running along the floor of the mine fresh air could be pumped and inside this large pipe would be another through which food and water could be forced to faucets or stations placed so that miners could reach them in case of cave-ins.

Sooner or later science must solve the question and save the enormous cost of coal production in human life. And there cannot be too many agencies of investigation into the means of accomplishing this greatly to be desired end.

New York bankers who were to finance the coke merger having withdrawn their offer to supply cash for carrying out its terms, the promoters have announced a new plan of organization. Twenty-five per cent of the valuation will be paid in cash, the balance in bonds. The company taking title to the property will issue five per cent gold bonds of which \$15,000,000 will remain in the treasury against an equal amount of bonds of sundry coke companies now outstanding, to be exchanged as opportunity presents. The remaining bonds will be sold and the proceeds turned over to the vendors in part payment, less expenses of sale, except \$5,000,000 cash which will be placed in the treasury of the company for a working capital.

Aldrich has filled New England's cup to overflowing, and a lot of little Western and Southern senators are holding out their pans to catch some of the drippings. That New England can "put it over" on the United States Congress is a commentary on senators and congressmen from all other sections that is not complimentary. The tariff is a local question: the question is, "If I help you stick the people on cotton goods for your folks, what'll you help me stick 'em on for mine?"

The railroads already see a shortage of cars confronting them. If the farmers could ripen their grain a couple of months earlier it would greatly accommodate the dilatory coal buyers.

So far as this immediate section is concerned we can't figure out just how the tariff on coal is going to help or to hinder us.

If you want to sell coal you had better bring it home to the retail dealer that he can get it cheaper now.

An esteemed contemporary speaks of the "ups and downs of the tariff." M'm, what downs?

FOUR TREMENDOUS LOCOMOTIVES.

Four of the largest locomotives ever ordered by the Santa Fe Railway are included in an order for additional locomotive equipment which has just been placed by the company to fill out the passenger service. They will be of the Mallet compound type. They will be used for the grades on Raton Mountain in New Mexico.

THE DEBT OF WOMEN TO THE LABOR MOVEMENT

Woman owes an incalculable debt to the labor movement, says the New York Herald. It has done for her everything that it has done for men. It has raised her earning wage, cent for cent and dollar for dollar, as it has raised the wage of the man-toiler. It has reduced her hours of labor in exactly the same proportion as it has decreased those of men. But the labor movement has done more than this—something that no other movement, no other institution, political, religious or economic, has done—it has made her the coequal of man. What church and State have persistently refused, and do vigorously protest against, the labor movement has from its very inception recognized fully and freely, to-wit, woman's right to political, social and industrial equality.

The deference to woman and the benefits which accrue to her with every step of progress made by the labor movement are not due, however, to any feelings of either sentiment or pity for her. There is nothing chivalrous about the labor movement. It is quite as soulless as the trust. It has naught to do with highfalutin notions about the gentleness and sweetness and virtue of womanhood.

The labor movement only recognizes the fact that women have got to work nowadays right alongside of men, and that therefore they must be dealt with as men. Economic conditions originally forced her to become his rival, and he is now using every effort in his power to make her his ally.

To this end her cause in the labor movement has been made identical with his. Every trades-union in any industry which employs women at all admits them on a basis of the socialist doctrine of perfect equality with its members. The rules and by-laws of these innumerable local trades-unions all over the land declare for women's political enfranchisement.

One obscure little trades-union is doing more for woman suffrage than all the women's clubs in America combined, because it is a necessity to the workingman that his wife and sister shall henceforth stand by his side. It is very important to the workingman—indeed, it is an absolute necessity—that the working woman shall make as much money as he does, and that she shall not work an hour longer.

Were this a merely chivalrous sentiment on his part it would count for little, but the feeling that inspires it is the strongest human instinct—that of self preservation. A man must live, and a man cannot live nowadays by the sweat of his brow unless the toil-stained woman is with him in his fight for the principles and practice for which the labor movement stands.

THE USE OF PEAT IN ALASKA.

The high price of coal and other fuels in Alaska, due to the fact that they have to be taken from a distance to the more remote regions away from water transportation routes, makes it advisable to consider the possibility of utilizing peat, great areas of which are common in the territory. More than 10,000 tons of this fuel are prepared and used annually in the countries of northern Europe, while in the United States and Alaska not 1,000 tons were used in 1908.

In the expectation that the great stores of fuel in the peat beds of Alaska may be used to some extent, C. A. Davis, of the United States Geological Survey, has written a paper describing the different processes of preparing peat for fuel (so far as they are applicable to the conditions existing in Alaska) and stating the cost of these processes.

NEW ENTERPRISES

Columbia Coal and Ice Company, Columbia, Pa.; capital \$30,000.

Imperial Coal Company, Elkhart, Ind.; capital increased to \$100,000.

Castle Valley Coal Company, Price, Utah; incorporated in Wyoming; capital \$5,000,000.

E. H. Ralf Coal and Supply Company, Fort Wayne, Ind.; capital increased from \$5,000 to \$20,000.

Oneida Coal Company, Chicago; capital \$400,000. Incorporators: W. W. Dixon, D. H. Mann, W. S. Jameson.

Success Fuel Burner Company, Chicago; capital \$100,000. Incorporators: Charles C. Hillman and others.

A. D. Lord Coal Company, Chicago; capital \$5,000. Incorporators: A. D. Lord, Arthur A. Basse, J. W. Raymond.

Workingmen's Cooperative Coal Company, Havre, Mont.; capital \$3,000. Incorporators: C. R. Davis and others.

American Coal Company, Boston, Mass.; capital \$50,000. President, J. Rosenthal, Boston; treasurer, P. C. Coblenzer, Roxbury.

Yukon Coal and Coke Company, Dawson, Yukon Territory; consolidation of the Tantalus and Tantalus Butte coal mines.

Franklin Feed and Fuel Company, Franklin, Ind.; capital \$15,000. Incorporators: S. B. Zink, R. S. Parkhurst, F. F. Zink.

Columbia Washed Coal Company, Chicago; capital \$2,500. Incorporators: E. P. Glennon, D. Hamilton Smith, T. J. Smith.

Campbell Supply Company, Abington, Va.; capital \$10,000. D. A. Preston, president; R. R. Campbell, secretary-treasurer.

Advance Coal Company, Springfield, Ill.; capital \$50,000. Incorporators: Winfield S. Wintermute, R. H. Williams, Young D. Clark.

Argo Fuel and Supply Company, Chicago; capital \$10,000. Incorporators: A. E. Scheppers, F. W. Raymond, Arthur A. Basse.

Frank G. Jones & Co., Louisville, Ky.; capital \$25,000. Incorporators: Frank G. Jones, Alfred A. Adler, A. W. Jones, C. L. Starr.

Independent Coal Company, Brooklyn, N. Y.; capital \$6,000. Incorporators: Sam Rubel, Morris Cohen, Louis Erickson, Isidor Rubel.

German Coal and Mining Company, Brazil, Ind.; capital \$6,000. Incorporators: William Siepmann, William B. Buchholz, John Nelson.

Sicorro Mines Development Company, Kansas City, Mo.; capital \$100,000. Incorporators: W. R. Tinken, E. S. Grignon, L. A. Sharrad.

Midland Coal and Coke Corporation, Wilmington, Del.; capital \$500,000. Incorporators: E. L. Squire, G. W. Dorsey, jr., Louis Rothstein.

Louisa Mines Corporation, Norfolk, Va.; capital \$15,000. James Mann, president; W. W. Sale, vice president; S. H. Tyler, secretary-treasurer.

Pittsburg & Ashland Coal and Dock Company, Ashland, Wis.; capital \$10,000. Incorporators: Fred Erickson, John A. Maher, John A. Johnson.

Chillicothe Ice and Fuel Company, Chillicothe, Mo.; capital \$35,000. Incorporators: C. H. Hackney, William Turner, W. J. Wiley and others.

COAL DEALERS HEAR SALESMANSHIP DISCUSSED

After Commissioner Hallock had read the minutes of the previous meeting, and they had been approved, the Chicago Coal Dealers' Association heard an entertaining address from Edward F. Trefz, on Salesmanship, which was well received.

Mr. Trefz was gracefully introduced by Vice President Robinson, who occupied the chair in President Rutter's absence. Mr. Robinson thought the great trouble with the coal dealers was that they lived too much in themselves and saw too little of each other. This association had done much in getting members together, had done much to eliminate bad conditions, etc. He urged larger and more regular attendance of members on the meetings as the best educational means he knew for a thorough coming together, and the certain removal of the worst difficulties that confronted them. The uplifting and upbuilding of the business of selling coal was in the hands of the dealers themselves. But they must first realize their needs, and then formulate the remedies to be applied. "God knows," he said, "if any business in Chicago needed uplifting and uploing it was the retail coal trade."

Mr. Trefz said he had been impressed with the remark of the gentleman who introduced him, that when times were bad and everybody up against it, the members came to the association and wanted its arms thrown around them. In good times when things were going well they stayed away and let the faithful few carry on the business of the organization. It reminded him of the two Irishmen afloat on a raft on the Ohio River in a storm. The wind was high and strong and had carried them out where the raft threatened to be dashed to pieces and the people aboard drowned, when one of the Irishmen suggested that they both pray. Pat was at one end of the raft and Mike at the other, and both prayed the best they knew how. At last Mike looked up, hearing no sound from Pat's end of the raft, and saw him poking about the raft with a pole. "Pat," he said, "get down on your knees and pray." "And why should I be praying," was Pat's answer, "when I can touch bottom with the pole?"

It was too common a trait of human nature to call for help only when everything was going to the bad. The strong organization was that which had the hearty support of all interested, even in times when it seemed that they were receiving no direct benefit from their organization. The failures of organizations usually came through the apathy of men like that. This was a day and time when every business had its organization, and when every organization had the moral right to expect and to demand the support of every man and every firm engaged in that business. The Chicago Association of Commerce was an instance of what great work could be accomplished by a strong organization, and yet how many of its members could sit down and reckon up direct and traceable benefits they had derived from it?

This was a day when every business had its organization and every business organization had the right to demand the support of all engaged in that business.

The most important part of any business was the selling end. That was the end in which they were interested. Salesmanship was the art of inducing others to buy what you have to sell and leaving them in a satisfied condition. A long line of repeaters was the success of any business. Quality of goods and excellence of service were the two essentials in business. As Elbert Hubbard said, every busi-

ness was but the shadow of the personality of one man. Every business was built on some one great personality. Unless some one were trained to take that man's place, his death would mean the loss of that personality and the final going of that business to the junk heap. Business success depended on personality; when men began to take stock of themselves, it indicated coming success. He had no use for the whiner, the man who talked of luck. The world moved by law, not by chance. It was by law that the seasons followed each other. Men who succeeded were men who went down into the depths of their own personalities and developed themselves. When in any sort of trouble, if you want the cause, go and look into the glass. If you can't run a coal yard, run a peanut stand; get into your class.

* * *

The real higher education was the ability to count up in dollars, not in pennies, what they earned. A man was an engine of fifty-two parts, fifty-two faculties to be developed. Development of these increased the personality in to a great one. Then he became a good business man. The one great feature of a successful personality was honesty. Every man that has been a good business man has been a good judge of human nature. The salesman must know human nature, and the better he knew it, the better salesman he was. Then you must know your goods. The game of success consisted largely in knowing your proposition and knowing how to demonstrate it, knowing it better than the other fellow. The selling is the great part about a business. Once in a thousand years you get a born salesman; between times you must train them. It is the training that counts in everything.

The speaker concluded by illustrating the value of training, telling graphically the story of the training of a football player and the success it won in a great game.

Continued applause followed the address, and a rising vote of thanks was given the speaker. The Entertainment Committee were also given a vote of thanks for providing the interesting address of the day.

Homer Jones, for the committee, said it had been a pleasure, not a task, to do this duty, and urged a full attendance at the next meeting, as another star feature had been provided.

Thomas Haskett, by request, also spoke, and gave a number of interesting points on the subject of intelligent salesmanship.

Mr. Robinson again urged the advantages of association and organization, and referred to what had been done by the members both with the association and independently. Many did not appreciate the organization and what the retail coal business of Chicago would be without it. The most of the trouble in Chicago today was in the districts from which it received least support.

Collections since last report aggregated \$954.05.

EXTENSIVE DEVELOPMENT PLANNED.

It is intimated that something may be done shortly toward development of the property of the Little Kanawha syndicate in West Virginia, consisting of more than 50,000 acres of coal land and about 20 miles of railroad track. The property was bought from Joseph Ramsey and George J. Gould several years ago by the Pittsburg and Lake Erie Railroad representing the New York Central, for \$8,500,000. Afterward it sold 50 per cent of the stock, the Pennsylvania and Baltimore & Ohio each taking 25 per cent.

ALABAMA COKE PRODUCTION IN 1908 DECREASED

For a quarter of a century, from 1880 to 1905, Alabama and West Virginia were close rivals for second place in the rank of coke-producing states, and during the last five years of that period each state held the place alternately. Since 1905, however, West Virginia has outranked Alabama and in 1907 produced over a million tons, or about a third more coke than her rival. It would appear, therefore, that West Virginia is permanently established as second among the coke-producing states. In 1908 West Virginia produced nearly 275,000 tons more than Alabama.

Alabama's production of coke decreased from 3,034,501 short tons in 1906 to 3,021,794 tons in 1907 and to 2,362,666 tons in 1908. The value, however, increased from \$8,477,899 in 1906 to \$9,216,194 in 1907, but fell off to \$7,169,901 in 1908. The decrease in 1908 as compared with 1907 was 659,128 short tons, or 21.81 per cent, in quantity, and \$2,046,293, or 22.2 per cent, in value.

The coke manufacturers of Alabama possess an advantage over those of West Virginia in having a home market for their product. This is best illustrated particularly by the difference in value between Alabama's production and that of West Virginia. While West Virginia coke is certainly of as good a quality as that of Alabama, the value of the smaller tonnage of Alabama in 1908 was greater by over \$1,900,000 than that of the larger production of West Virginia. Notwithstanding the depression in 1908, the average price per ton of Alabama coke declined only 1 cent, from \$3.05 to \$3.04, while that of West Virginia declined from \$2.36 to \$2.

There were forty-five coking establishments in Alabama in 1908, an increase of two over 1907. The total number of ovens increased from 9,889 to 10,103. Of the forty-five establishments ten, with a total of 1,885 ovens, were idle during 1908, as compared with six idle establishments having a total of 715 ovens in 1907. There were no new ovens building at the close of 1908. The establishments in Alabama include two by-product recovery plants with a total of 280 ovens, all of which were operated during the year.

Considerable increase is noted in the percentage of coal washed before coking in 1908 as compared with 1907. In 1907 the total quantity of coal washed was 3,924,956 short tons, or 79 per cent of the total. In 1908 the quantity of coal washed was 3,274,480 tons, or 84 per cent of the total. Of the coal used for coke making in 1908, 2,005,453 tons was run of mine and 1,871,338 tons slack.

OPTION ON KENTUCKY MINE.

Chicago people have an option on one of the mines of the Kentucky Coal and Mining Company at \$80,000 to run 40 days. This company, which is not unknown in the newspapers from its financing stunts, owns between 3,000 and 4,000 acres of coal lands in Union County, Kentucky, near Morganfield. It operates three mines—one at Waverly, one at Uniontown and one at Bakersville. The mine upon which the option has been given is the Uniontown mine. The company is an Oklahoma corporation, with a capitalization in the neighborhood of \$5,000,000, and about \$100,000 of Cincinnati cash has already been sunk in the venture. In its present condition about \$1,300,000 of stock has been issued, and \$55,000 of an authorized issue of \$100,000 6 per cent bonds has been sold. The total debt of the company, including the bonds, was reported at the meeting to be about \$130,000. The mine to be sold includes about 1,000 acres of coal land, and is covered with a \$20,000 mort-

gage. The mine and property cost the company \$57,000, and if the option is exercised there will be a profit. It was urged at the meeting that the stockholders make efforts to sell the remainder of the bonds in order to provide working capital for the company.

INCREASE IN COKE OUTPUT.

That better times are in store for the coke region is evident from the substantial increase in production. The third week in July made the best showing of any for many months, the increase being 30 per cent over the previous week. The total production was almost 400,000 tons, while that of the week before was under 300,000. Besides this 1,325 more cars of coke were shipped during the week, and about 500 more ovens were put in operation.

From the present outlook it is a matter of but a few weeks until every oven in the region will be working. At present the region is handicapped by a scarcity of men. While the demand for coke is increasing there is practically no change in prices. The Frick company made the greatest increase, its output running 85,765 tons above the previous week, and nearly all its ovens were run to full capacity.

DEMAND FOR FINE COAL.

Coal operators of the Hocking valley are now having a good demand for their fine coal, the first time there has been such a state of affairs for many months. For a time last year all the sidings along the coal roads were filled with cars loaded with fine coal, the state railroad commission having permitted the railroads to waive demurrage on this grade of coal when stored in cars. Now, with the renewed industrial activity, the demand for this coal has come up and prices have strengthened materially.

TO TAP GREAT COAL FIELDS.

It is learned from a semi-official source that the Little Kanawha syndicate, controlling the little Kanawha and other branch railroads, is now preparing to extend its lines to connect with the coal and coke region at Walkersville. Options on the right of way through Gilmer and Calhoun counties are now being taken. The proposed extension when completed will tap the great coal fields in the interior of the state and give their product speedy transportation through the great lakes.

TRY TO BLOW UP MANAGER'S HOUSE.

One of the worst acts of violence in connection with the miners' strike at the collieries of the Dominion Coal Company was perpetrated July 27th, when a quantity of dynamite was exploded beneath the piazza of the residence of Manager Simpson of the Dominion No. 10 colliery. A part of the piazza was blown off, windows were shattered and plaster was knocked down in several rooms. No one was hurt.

COAL MINE SUPERINTENDENT KILLED.

In an explosion of fire damp in the Highland coal mine at Warnock, Belmont county, Ohio, Thomas Southern, of New Philadelphia, Ohio, superintendent, was instantly killed. Accompanied by a party of miners, Southern entered the mine with a lighted lamp, and the explosion occurred 200 feet from the mouth of the shaft. A number of the miners were injured, but none seriously.

A large coal corporation, believed to be backed by the Wentzes, of Philadelphia, is negotiating for the purchase of all the coal plants in the "pocket" region of the Black Mountain in Lee county, Virginia.

LIABILITY OF COAL MINING COMPANIES

Justice Hand recently delivered the decision of the Supreme Court of Illinois in a case involving the liability of coal mining companies, which will be of interest to all operators in the state. The case was that of Charles H. Dunham, appellee, vs. Black Diamond Coal Co., appellant, and the opinion was as follows:

"This was an action of the case commenced in the Circuit Court of Sangamon County, by Charles H. Dunham, the appellee, against the Black Diamond Coal Company, the appellant, to recover damages sustained by the appellee, while engaged as a mule driver in the mine of the appellant, in consequence, as it is alleged, of the willful violation of the Mine and Mining Act by the appellant. The jury returned a verdict in favor of the appellee for \$365.00 upon which the court, after overruling motions for a new trial and in arrest of judgment, rendered judgment, which judgment has been affirmed by the Appellate Court for the Third District, and that court having granted a certificate of impotency, a further appeal has been prosecuted to this court.

"The declaration contained three counts. The first count averred that the plaintiff was working as a mule driver in defendant's coal mine; that there was in the entry of said mine in which plaintiff worked, and within reach of the mule which he drove while in use, a live electric wire which was not properly insulated or otherwise protected; that defendant willfully failed to comply with the statute in this; that it did not have its mine examiner visit the said mine and inspect the same and observe any unsafe conditions and mark the same as a dangerous place, and had not prevented plaintiff from entering to work in said mine until all conditions had been made safe; that the plaintiff entered said mine to work, and while driving the mule hitched to a coal car, and because of the unprotected condition of said wire, said mule received a shock by coming in contact with said live wire, and because thereof became unmanageable and pulled the coal car from the track and against a post standing close to the track, and caught plaintiff between the said car and post, injuring him. The second count contained the same allegations as the first, and in addition thereto charged that the defendant willfully failed to have its mine manager see to it that all dangerous places were properly marked and that danger signals were displayed, and that the place in question was not marked as dangerous. The third count averred a failure on the part of the defendant to observe that provision of the statute relating to mines and mining which provides that no one shall be allowed to enter a mine to work therein, except under direction of the mine manager, until all conditions shall have been made safe, and that plaintiff was willfully permitted to enter the mine to work while the conditions were unsafe, and that while at work he was injured. The general issue was filed.

"The evidence of appellee fairly tended to show that in June, 1907, appellee was at work for appellant in its coal mine as a mule driver, hauling cars in the entry; that over the part of the roadway which he used in his work there ran a trolley wire to convey an electric current to a motor used in the entry of the mine. This trolley was only about five or five and one-half feet above the bottom of the entry and about twelve inches outside the rail, and was uninsulated and unprotected; that while there was a current of electricity passing through said wire, the head of the mule that appellee was driving came in contact with a live wire, whereby he received a shock and became unmanageable,

and pulled the car from the track and against a post standing near to the track, and that appellee was caught between the car and post and injured.

"At the close of all the evidence the defendant made a motion for a directed verdict in its favor, and the overruling of that motion is the principal ground for a renewal urged in this court.

"The first contention of the appellant is that the evidence does not show a willful violation of the provisions of Mines and Mining Act, in this; that it is said the provisions of said act are not intended to apply to a dangerous condition in a mine which is the result of faulty conditions in the mine of a permanent nature, caused in the course of construction in opening the mine, but that the dangerous conditions which the statute covers are of a temporary character, and such as arise in the operation of the mine, and that as the live wire which came in contact with the cars and head of the mule which the appellee was driving at the time he was injured, was a part of the permanent construction of the mine, the appellant was not liable for a willful violation of said statute. We cannot accede in this contention, but think the statute broad enough to protect the appellee from all dangerous conditions found in the mine. The statute provides that no one shall be allowed to enter the mine to work except under the direction of the mine manager 'until all conditions have been made safe,' and that when dangerous conditions are discovered to exist in the mine, the mine examiner shall place a notice to all men to keep out of the mine. Clearly this language of the statute applies to a dangerous condition in the mine, such as the track over which the cars are drawn or in the roadbed or the sides of the entries by which the mine is traversed, as well as dangerous conditions caused by the falling of rock or other debris, and clearly includes a live wire so placed in the mine that a driver or his mule is exposed to contact therewith while in the mine and from which an injury similar to the injury received by appellee might result. In *Spring Valley Coal Co. vs. Greig*, 226 Ill. 511, it was held that the statute covered a stationary engine situated at the top of the mine, used to furnish power to haul coal cars to the retail dump and to bring back the empty cars by means of a cable.

"It is also urged that the statute under the doctrine of *eiusdem generis* (other such like) is limited to the dangers specified in the statute in expressed terms, and to the same kind of dangers as are expressed in the statute in specific terms, and that the words, 'any dangerous condition' found in the statute, are without significance to extend the scope of the statute. This question was before this court in *Mertens vs. Southern Coal and Mining Co.*, 235 Ill. 540, where it was disposed of adversely to the contention of appellee.

"We do not think the court erred in declining to take the case from the jury.

"It is also contended that the trial court erred in declining to direct a verdict for the defendant upon the second count of the declaration, and in overruling its motion in arrest of judgment, as it is said the second count of the declaration was broader than the statute, in that it averred that the mine manager failed to properly mark and display danger signals at the place where appellee was injured, when the duty of the mine manager only required him to see that such places were marked or danger signals dis-

(Continued on page 421.)

NORTH DAKOTA LIGNITE GIVEN A BIG BOOST

North Dakota lignite is given a big boost in The New York Sun, of a recent date, in an article which says that cheap coal has risen in value because it does twice the work of the more expensive high grade coal. According to reports by government experts on fuel the gas engine is capable of generating from two and a half to three times as much power from a given amount of coal as the steam engine. It economizes also in another way. Fuel with so high a percentage of impurity that it could not hitherto be used in factories can now be made to generate sufficient power by means of a gas engine to do the same work that otherwise would require double the quantity of high grade coal.

Quoting The National Magazine, it said that the lignite coal of North Dakota has thus been made to give out as much gas engine force as the best West Virginia and bituminous coal used under steam boilers. Some sort of coal is indigenous to almost all parts of America, but the fact that in the average steam engine only 5 per cent of the coal energy is transformed into actual working power made low grade coal of little commercial value until the perfection of the gas engine, which increases the efficiency of fuel by almost 12 per cent.

Time was when the big mills had to be placed beside some swift running stream to secure water power. Later on factories sought to be in the vicinity of the great coal fields, but today, with the generating power of the gas engine, it is a matter of little importance, so far as power is concerned, where a plant is built.

THE SCOTTISH COAL CRISIS.

The position in the Scottish coal trade becomes increasingly grave. The young miner is loud in his demand for a strike but the real, practical miner is not. Influential coal masters seen are somewhat chary to offer any opinion, but they do not disguise the fact that they have said their last word with respect to a minimum wage. The suggestion will be made that the British Miners' Federation Conference ask the masters for another joint conference. Reports presented to a meeting of delegates of the North Staffordshire Miners' Federation at Burslem showed that only thirteen of forty-four branches were against accepting the coal owners' terms, and as it had been agreed to abide by the decision of the majority, it was unanimously decided to resume work immediately. The terms of the settlement are twenty minutes meal time, and cessation of work on Saturdays as before the act. The Warwickshire miners, who have been on strike since July 1, have decided to return to work, the matters in dispute being referred to the Board of Trade.

COAL IN THE FAR WEST.

The United States Geological Survey has completed the statistics of coal production in 1908 in all of the Rocky Mountain and Pacific states, Colorado, Idaho, Montana, New Mexico, North Dakota, Utah and Wyoming; the output in 1908 amounted to 21,684,414 short tons, valued at \$33,252,730. In 1907 the production in these states was 23,990,917. In not one of these states did the production in 1908 exceed that of the preceding year. The total decrease amounted to 2,306,503 tons; the decline in value was \$2,845,059. Almost exactly 50 per cent of this decrease in production occurred in Colorado, whose output declined 1,155,263 short tons. Nearly 40 per cent of the decrease, or 763,839 tons, was in the output of Wyoming. These two

states, Colorado and Wyoming, contribute more than two-thirds of the total production of the Rocky Mountain region.

The Pacific Coast states, which include the territory of Alaska and the states of California, Oregon and Washington, in 1908 produced 3,123,468 short tons of coal, valued at \$6,976,332, against 3,775,602 short tons, valued at \$7,937,918, in 1907, a decrease in production of 652,134 short tons in quantity and of \$961,586 in value. In California and Oregon there were small increases in production, but in Alaska and in Washington the production decreased. Of the total production in the Pacific Coast 97 per cent is from Washington.

Detailed statistics covering coal production in the Rocky Mountain and the Pacific Coast states will be published in the forthcoming report by Edward W. Parker of the Geological Survey, on the coal production of the United States in 1908.

GOOD JEFFREY COMPANY CONTRACTS.

The Jeffrey Manufacturing Company, of Columbus, will build a picking table for the Frances mine of the Pittsburg-Buffalo Coal Company in the Pennsylvania coal district which will be the largest in that state. The company will also build 20 air machines for the coal company, the contract involving in all about \$55,000. The Pittsburg-Buffalo company is spending over \$800,000 in improvements on its mines at Marianna, Pa. Among other contracts for this work which came to Central Ohio is that for the twin duplex cross compound high pressure presser of a capacity of 20,000 cubic feet, which has been taken by the Newark Iron Works at a cost of \$25,000. All of the equipment for the Marianna mines will be compressed air instead of electric power, in order to avoid the possibility of another accident such as shocked the entire mining world at these mines a year ago.

COAL DOCK AT DULUTH.

Contracts have been awarded for practically all the work to construct a new coal storage dock at Duluth for the Carnegie Coal Company of Pittsburg. The decision of this company to enter independently into the coal trade of the Northwest instead of through some of the established agencies caused no little interest in coal circles in Columbus. The company has three mines operating and is an important factor in the rail and lake coal trade. The recent decision to build a coal dock at Duluth was followed by the leasing of the dock from the Great Northern Railway Company. It is a small dock, but the new leasors will extend it 1,500 feet and construct coal loading machinery and a complete modern equipment for handling and storing 500,000 tons of coal.

VIOLATION MUST BE INTENTIONAL.

The indictment in the United States District Court at Chattanooga, Tenn., against W. J. Oliver, of Knoxville, charging violation of the Federal law prohibiting the work of laborers more than eight hours a day on government work, in the construction of the Hale's bar lock and dam across the Tennessee River near Chattanooga, was dismissed some time ago by Judge E. T. Sanford. The attorneys for Mr. Oliver moved that the case be quashed on the ground that the indictment was defective in that it did not allege "intentional" violation, claiming that the Federal statute made this an essential part of an indictment. J. R. Penland, United States District Attorney, contended that the use of "unlawful" violation in the indictment was broad enough, and that "intentional" was not essential. The court, however, ruled against the District Attorney.

NEED BROAD PLAN OF WATERWAYS IMPROVEMENT

In its unqualified endorsement of the movement for waterways improvement, the report of the National Conservation Commission, which has just been printed in full as a Senate document, places upon an authoritative basis the claims that have all along been made by the friends of the movement. In this report a score of the biggest men in government circles today, the men who know most about the matter, agree that a broad plan for waterways improvement should be immediately laid down and followed to completion. The report says in part:

"It is now recognized by statesmen and experts that navigation is interdependent with other uses of the streams; that each stream is essentially a unit from its source to the sea; and that the benefits of a comprehensive system of waterway improvement will extend to all the people in the several sections and States of the country. It is also recognized, through the unanimous declaration of the governors of the States and Territories adopted in conference with the leading jurists and statesmen and experts of the country, that in the use of the natural resources the independent States are interdependent, and bound together by ties of mutual benefits, responsibilities and duties.

"It has recently been declared by a majority of our leading statesmen that it is an imperative duty to enter upon a systematic improvement on a large and comprehensive plan, just to all portions of the country, of the waterways and harbors and Great Lakes, whose natural adaptability to the increasing traffic of the land is one of the greatest gifts of a benign Providence; while the minority indorsed the movement for control of the waterways still more specifically and in equally emphatic terms. Within

recent months it has been recognized and demanded by the people, through many thousand delegates from all States assembled in convention in different sections of the country, that the waterways should and must be improved promptly and effectively as a means of maintaining national prosperity.

"The first requisite for waterway improvement is the control of the waters in such manner as to reduce floods and regulate the regimen of the navigable rivers. The second requisite is development of terminals and connections in such manner as to regulate commerce. In considering the uses and benefits to be derived from the waters, the paramount use should be water supply; next should follow navigation in humid regions and irrigation in arid regions. The development of power on the navigable and source streams should be coordinated with the primary and secondary uses of the waters. Other things equal, the development of power should be encouraged, not only to reduce the drain on other resources, but because properly designed reservoirs and power plants retard the run-off and so aid in the control of the streams for navigation and other uses.

"Broad plans should be adopted providing for a system of waterway improvement extending to all uses of the waters and benefits to be derived from their control, including the clarification of the water and abatement of floods for the benefit of navigation; the extension of irrigation; the development and application of power; the prevention of soil wash; the purification of streams for water supply, and the drainage and utilization of the waters of swamp and overflow lands."

NEW LABOR LAWS IN THE NETHERLANDS

The new law governing labor contracts in the Netherlands went into effect the first day of February, 1909. The following intelligent review of the new law is furnished by Consul-General Soren Listoe, of Rotterdam:

In the civil code of the Netherlands only three paragraphs referred to "the hiring of servants and workmen," but as that law was enacted prior to the year 1838 it is not surprising that its stipulations were considered too one-sided under the present conditions of labor and living; hence a new law was presented and received the sanction of both Chambers of the States-General.

The contract or agreement between employer and employee or laborer may be made verbally as well as in writing; in the latter case all costs and charges in connection therewith are for account of the work-giver (employer), who is supposed to be financially the stronger party.

All contracts, or even receipts for wages, are exempted from the "stamp tax." If agreement to deviate from the requirements of the law should be made, which is in some instances allowed, it is essential that a written contract be made.

Rights of Married Women and Minors.

A married woman, who is still considered a minor in Dutch juricature, is specially permitted to accept a position, sign the labor contract, and collect the wages, without the consent of her husband; but when she contracts, as an employer, for the services of household servants, she is

supposed to have first obtained the required permission of her husband.

Thus far the Dutch husband has had the sole right to dispose of the income of his wife, unless it was distinctly agreed by contract made before the marriage that such should not be the case, but this general rule has, by the new law, been revoked as far as the income of the wife as "laborer" is concerned. In order to prevent the husband from lawfully claiming the earnings of his wife and spending them in any manner he sees fit, this law provides that the married woman is entitled to "the disposal, in the interest of the household," of all moneys which she earns or which is due to her under an existing labor contract.

A minor can only contract for labor with the permission of his father or guardian, which permission is considered as given when the lawful representative has not raised any objection within four weeks after the contract has gone into effect.

In everything connected with the labor agreement the minor has the same rights as if he were of age, with two exceptions: (1) He can not begin legal proceedings unless assisted by his lawful representative, and (2) as to the collection of his wages he is still a minor. The written contract may contain a stipulation that his wages are wholly or partly payable to his lawful representative, and even if a written contract does not exist this payment will have to be made to his lawful representative if the latter insists upon it in writing. To avoid all possible complications in

regard to the work-giver refusing to pay the minor his wages or the father or guardian claiming his wages, the law provides that the work-giver is fully discharged of all obligations by making payment to the minor unless the lawful representative has forbidden by contract or in writing that such payments should be made to such minor.

If the work-giver be a minor he will not be allowed to make an agreement or contract unless he has been declared of age in all forms of law.

Regulations—Payment of Wages.

Regulations made up by the work-giver (employer) are only binding on the workmen in the following instances: (1) A complete copy of the rules must be handed to the laborer; (2) a copy must be filed, for the information of the public, with the justice of peace in the district where the working place in question is located, and (3) a copy must be posted for reference in the factory or workroom.

Wages must be paid to the workmen in person unless a written authority exists by which somebody else is authorized to collect the same. The wages must, as a rule, be paid in currency. Products of the business may only to a small extent take the place of cash money in payment of wages. Thus, if previously agreed upon, a baker, for instance, is allowed to give his help one loaf of bread per day in part payment of his wages. House servants, waiters, seamstresses, who are in the domestic circle of the employer, are partly paid by the boarding and lodging which they receive. But, as a fundamental principle, it has been laid down in the law that payment or part payment in the shape of groceries and other necessities of life are illegal and void. This restriction has been made with a view of putting a stop to the practice of forcing upon workmen the obligation of buying in certain stores kept by the employer or his proteges and drawing their wages in the necessities of life for themselves and families, which, in many instances, has been the cause of defraudation on the part of the employers and of great dissatisfaction among the working people.

The new law provides that the amount of wages which, owing to the ignorance or economical weakness of the workman, is not paid in cash may again be claimed, and must then be paid a second time by the employer. Payment of wages must be made at the end of the agreed period; thus week laborers must be paid at the end of every week.

In case the payment does not take place in time the work man or woman can claim after the third day 5 per cent additional for five days and 1 per cent for every further day to which the payment is deferred, but it must never exceed 50 per cent of the week's wages. Sunday labor must not be exacted unless it is specially agreed upon by written contract.

Sick Funds and Sick Treatment.

Funds are permitted to be established for the purpose of payments to the working people in case of illness, infirmity, death, etc., and the contribution of the employe may be deducted from his wages, but the interested workmen must be represented in the management of such funds and the moneys must be kept entirely separate from the business and personal possessions of the employer. The rules and regulations of such funds are binding as soon as they are signed by the representative managers and filed with the justice of peace of the district.

A copy of the rules and regulations must also be kept plainly visible in the factory or workshop.

All employes who are boarding with their employers are entitled to medical treatment for at least six weeks, unless he or she on their own accord should prefer to be nursed and treated elsewhere.

The employer, however, is not obliged to have the em-

ploye treated in his (the employer's) house; the law insists upon "proper treatment," and when the employe is sent to a hospital for account of the employer the requirements of the law are fully met.

Imposing Fines—Exceptions to Law.

Fines will only be exacted under the following conditions: (1) Where they have been agreed upon in the labor contract and the amount of the fines therein stated; (2) the contract must be in writing and the employer and employe must both have signed it; (3) the disposition to be made of the fines must be clearly stated; (4) the employer is obliged to give a written statement showing the amount of fine and the reason for its deduction. The amount of fines is not to exceed one day's wages out of one week's pay.

The requirements of the law must be observed by all employers and employes, with the exception of shipowners and captains and crews of seagoing vessels. Employes and workmen whose income amounts to \$480 per year are considered more or less financially independent, and for such some paragraphs of the law which are strictly binding for workmen earning less wages may be deviated from or set aside.

PEAT FUEL IMPRACTICABLE.

The peat fuel industry on which millions of dollars have been spent in exploitation is discussed by A. H. Windsor in an editorial in the August number of Popular Mechanics. Among other things Mr. Windsor says: "It seems unlikely that peat as a source of power, or even heat will be a practical proposition at least for many years to come, as the cost of extracting the water (which constitutes 80 per cent or more of its weight when dug), either by natural or mechanical methods, leaves the net result too small. The price of coal in this country, together with the possibilities of water powers and windmills, puts peat as a power in the class of those things which are possible, but not profitable; and this condition will doubtless continue for many years. Our coal deposits are too large and accessible to permit peat to come into competition, and it must always labor under the same disadvantage as the lignite of the Dakotas—that of large bulk for any given weight.

"Much more likely is it, that before peat can hope to become a commercial commodity of any consequence, our electricians will have perfected long-distance transmission of electricity which will enable them to gather the intense heat of Death Valley and other southwestern deserts for delivery in every city from the Atlantic to the Pacific."

COAL SCREEN LAW UPHELD.

A mandate has been received from the United States Supreme Court by P. D. English, clerk of the Arkansas Supreme Court, ordering execution in the case of John McLean vs. The State, involving the validity of the coal screen law and in which McLean, as manager for the Bolen Darnell Coal Company, was fined \$200 and costs for violating the law against screening coal at the mines. The state courts were sustained in every contention as to the validity of the law.

DEAL IN SOUTHERN WEST VIRGINIA.

The largest individual coal land deal that has been made in Southern West Virginia in a number of years was closed by J. L. Caldwell, of Huntington, W. Va., president of the Dingess Run Company, when he took over a 3,000-acre tract of land, rich in coal deposits, from Crawford, Ashbury, and other Charleston capitalists, paying \$60,000 in cash. The tract is located on the dividing ridge between the Coal and Guyandotte rivers, in Logan County.

THE ORGANIZATION OF LABOR

Extracts from an Editorial in the American Federationist for August, Signed by JOHN MITCHELL.

When his election as president of the National Association of Manufacturers was announced, Mr. Kirby declared:

My policy is the policy of David M. Parry and J. W. Van Cleave. The question that is uppermost in our minds today is the labor question. I have been selected as your president not on account of my ability; not on account of my national reputation, but because you know where I stand on the labor question.

As an illustration of the methods to be pursued, Mr. Kirby referred to an incident of the civil war in which Governor Seymour, of New York, attempted unsuccessfully to quell with a pacific speech a riot in Troy. "Then," said Mr. Kirby, "a captain wheeled a twelve-pound gun into line and the rioters dispersed in every direction. That's my way of dealing with a criminal! The only way to handle that animal" (the organized wage earner) "is to take him by the horns and shake the cussedness out of him. The labor question involves a great principle that should not be compromised if America is to stay America. . . . We find men of prominence who ought to be ashamed of themselves, harboring the leaders of that organization" (the American Federation of Labor) "and sending them out over the country to address women's clubs. That is the greatest danger we have. If it had not been for that class of people, organized labor of the militant type would be as dead as a mackerel today."

Contrast the above with the following utterances:

Said William H. Taft, addressing the annual meeting of the National Civic Federation, last December:

"Time was when everybody who employed labor was opposed to the labor union; when it was regarded as a menace. That time, I am glad to say, has largely passed away, and the man today who objects to the organization of labor should be relegated to the last century. It has done marvels for labor and will doubtless do more. It will, I doubt not, avoid the reduction to a dead level of all workmen."

Pope Leo XIII, in his Encyclical "On the Condition of the Laboring Classes," advocated the formation of workmen's unions—

"To better the condition, both of families and individuals; to infuse a spirit of equity in the mutual relations of employers and employed; to keep before the eyes of both classes the precepts of duty and the law of the gospel."

Said Potter Palmer:

"For ten years I made as desperate a fight against organized labor as was ever made by mortal man. It cost me considerably more than a million dollars to learn that there is no labor so skilled, so intelligent, so faithful as that which is governed by an organization whose officials are well-balanced, level-headed men. I now employ none but organized labor and never have the least trouble, each believing that the one has no right to oppress the other."

Said the late Bishop Potter:

"Organization, co-ordination, co-operation are the right of every body of men whose aims are worthy and equitable, and must needs be the resource of those who, individually, are unable to persuade their fellow-men to recognize the justice of their claims and principles. If employed within lawful and peaceful limits, it may rightly hope to be a means of educating society in a spirit of fairness and practical brotherhood."

Said Melville E. Ingalls, chairman of the board of directors of the Big Four Railroad:

"For 35 years of my life I have been what you might call a large employer of labor, as a railroad manager. I have seen these modern conditions grow up under my eye. My first experience was in controlling a railroad of 175 miles and three or four hundred employees. I knew every man on the road; I could call him by name and shake hands with him, and we could make all the trade agreements we needed between hours. There was no trouble. If anybody had a grievance he could come in to see the Old Man, and the door was always open. When I left the active management of the road we had some 7,000 miles of railroad and some 30,000 employees, and the man who worked on the railroad would have stood just as much chance to see any one with his grievance as he would to get into the Kingdom of Heaven. His only chance was to join an organization and deal through committees. We were always in favor of that; in fact, it seems to me that your trade agreement is just as much a protection to capital as to labor."

Said the late Senator M. A. Hanna:

"Don't organize for any other purpose than mutual benefit to the employer and the employee. Don't organize in the spirit of antagonism; that should be beneath your consideration. If you are the stronger or the abler, much less excuse you have to show resentment, because the other side is simply asking that they have their share. . . . If we can by any method establish a relation of mutual trust between the laborer and the employer, we shall lay the foundation stone of a structure that will endure for all time. . . . It is all wrong to suppose that the laboring element of this country is not ready and willing to join in this movement. I speak from experience. I have found the labor organizations ready and willing to go more than half way."

Said Cardinal Manning:

"Labor is Capital. Labor has the same right to protect itself by trade unions as any other form of capital might claim for itself."

Said William E. Gladstone:

"Trade unions are the bulwarks of modern democracies."

I am sure that I shall not be charged with transgressing the rules of propriety if I suggest that the National Association of Manufacturers should take counsel of and profit by the experiences of the great industrial enterprises of our country, the owners and managers of which work in harmony and co-operation with the organized workmen they employ. On every hand workmen and employers are seen peacefully at work developing, conducting and expanding the industrial enterprises in which they are both interested and upon the success and prosperity of which their mutual welfare depends. Unless one's mind is distorted by unreasonable prejudice, unless his eyes be blinded by insatiable greed or passion, unless he be incapable of learning the lesson which history teaches, he will understand that a movement which has done so much to improve the conditions of life and labor, to protect the womanhood and childhood of the nation, to elevate the moral and intellectual standards of the people, and to improve the relations between employer and employed, can not be destroyed or impeded permanently by the irrational and intemperate declarations of men who are *in* their generation, but not *of* it.

MISSOURI COAL IN 1908, 3,317,315 TONS

The total production of coal in Missouri in 1908, according to statistics collected by the United States Geological Survey under co-operative agreement with H. A. Buehler, state geologist, was 3,317,315 short tons, having a spot price of \$5,444.907. In Missouri, as in Arkansas, Kansas, and Oklahoma, the coal-mining industry in 1908 was adversely affected more by the increased production and consumption of petroleum and natural gas in the Mid-Continent field than by the business depression. Natural gas from the eastern Kansas fields is now piped to Kansas City, St. Joseph, and Joplin, Mo., and to Atchison, Leavenworth, Lawrence, Arkansas City, Winfield, Wichita, Wellington, Hutchinson, Pittsburg, and Galena, Kan. Oil from the same fields and from northern Oklahoma is being extensively used for fuel at Kansas City. These conditions have naturally affected the coal production of Missouri. The coal-mining industry of the state reached its maximum production, 4,238,586 short tons, in 1903. It decreased slightly in 1904, 1905, and 1906; rose somewhat in 1907, to 3,997,936 short tons; but decreased again in 1908 by 680,621 short tons, or 17.02 per cent, in quantity, and by \$1,095,802, or 16.75 per cent, in value. The difference in the price per ton in 1908 as compared with 1907 was only a small fraction of a cent.

To Missouri's coal production in the last few years should be added considerable tonnage credited to Kansas, the workings of the mines at Leavenworth extending under Missouri River into Missouri territory and the larger part of the production of Leavenworth County, Kansas, being in fact taken from beds underlying Platte County, Mo. Possibly a quarter of a million tons of the coal credited to Kansas is mined in Missouri.

Labor and Operating Conditions.

In spite of the decreased production in 1908, the number of men employed was 6 per cent larger than in 1907. This was due to the slight demand for labor in other lines of industry, particularly among the metal mines, which resulted in a surplus of labor in the coal-mining districts. The total number of men employed in 1908 was 8,988, but the average number of working days was 169, against 214 days in 1907. A good deal of the idle time was due to the suspension of operations by the union mine workers on April 1, which lasted about two months. The total number of men on strike was 6,350, and the total time lost was 355,138 days, an average of 56 days to a man, or about 23 per cent of the total time made during the year. The average production for each employe was 369 tons, compared with 473 tons in 1907 and 393.2 tons in 1906. The average daily production for each employe in 1908 was 2.18 short tons, against 2.21 tons in 1907 and 2.13 tons in 1906.

Practically all the more important coal-mining operations in Missouri are conducted on the basis of an eight-hour day, 149 mines, employing a total of 8,464 men, so reporting in 1908.

The use of mining machines for undercutting coal in Missouri is almost entirely confined to the thin beds where machines of the long-wall type can be used to advantage. In 1908 the number of machines reported in use was 57, of which 52 were long-wall machines and 5 of the pick or puncher type. The quantity of coal mined by machine in 1908 was 479,850 short tons, or 14.47 per cent of the total output, against 486,882 short tons, or 12.18 per cent of the total output, in 1907.

Only one company in Missouri is reported as having installed washing machinery. This company has four Stew-

art jigs in operation and in 1908 washed 74,104 short tons of coal, obtaining 55,576 tons of cleaned coal and 18,528 tons of refuse.

J. W. Marsteller, secretary of the Missouri bureau of mines and mine inspection, reports a total of 10 fatal and 36 non-fatal accidents in the coal mines of the state during 1908. Nine out of the 10 fatalities were caused by falls of roof, and one man was crushed by mine cars. Of the non-fatal accidents, 24 were due to falls of roof or coal, six were due to mine cars, two men were caught by the cage, and four accidents were due to miscellaneous causes. The death rate per thousand in 1907 was a little less than 1; in 1908 it was 1.11. The number of tons mined for each life lost in 1907 was 499,742; in 1908 it was 331,732.

The market for the coal product of Missouri is practically confined to the state's own borders, as it is surrounded by other large coal-producing states—Iowa on the north, Kansas on the west, Arkansas and Oklahoma on the south, and Illinois and Kentucky on the east. Moreover some of the larger cities draw their principal fuel supplies from the neighboring states, St. Louis, for instance, being chiefly supplied with coal by Illinois, and Kansas City drawing its fuel largely from Kansas.

The original coal supply of Missouri, as estimated by M. R. Campbell of the United States Geological Survey, was 40,000,000 short tons, included within an area of 16,700 square miles. The production of the state, according to the best records available, amounted at the close of 1908 to 100,935,421 short tons, representing an exhaustion of approximately 151,000,000 tons, or 0.4 per cent of the estimated original supply.

GOOD CONTRACT FOR KENTUCKY COAL.

The West Kentucky Coal Company, which has its offices in Paducah, Ky., announces the closing of a contract with a large steamship line at New Orleans for 600,000 bushels of coal to be delivered within three years. The company is making a fight in competition with Pittsburg for Southern business. It also has closed big contracts for shipments into Texas, having built a railroad from the river to Donaldsonville, La. Additions are being made to the force at the West Kentucky Company's barge plant, recently built here, and it will be operated to its fullest capacity. The company's mines are located at Caseyville, Ky., and the tows are made up here.

COLORADO NEEDS MORE MINERS.

More miners and more coke pullers is the cry now being set up by the coal companies, big and little, in Colorado. The coal season has opened sooner than was expected and the railroads are already preparing for the heaviest business from that State in their history. The big coal companies are working every day to supply big coke orders. The smaller mines are getting orders from all over the Kansas, Nebraska and Oklahoma territory for what promises to be the heaviest harvest in many years. The railroads will require more than the usual amount of fuel in order to handle the crops as soon as they are ready to market.

PENNSYLVANIA WASHERIES RESUME.

All the anthracite washeries resumed work in the Pottsville, Pa., district, owing to the heavy demand which has set in for the steam sizes of hard coal. Five thousand men who were idle most of the summer were given employment.

IMPORTANT DUTIES OF A MINE FOREMAN

Address Before Coal Operators and Mine Officials at Birmingham, Ala., by EDWARD FLYNN,
Chief Mine Inspector of Alabama.

"You have heard some very able addresses from the medical fraternity in regard to 'first-aid to the injured.' They were very good, indeed, and the suggestions impressed me as being the proper things to do on certain occasions, and I trust that first-aid corps will be organized in all the mining camps of this state, and those first-aid corps are very important. The subject is very important, but I have the honor of representing a department that in my opinion is far more important than the subject that has been discussed here, because the gentlemen who have talked told you how to administer to the injured, while our department is created for the purpose of telling you how to prevent the injuries (applause), and if we can succeed in preventing the injury, then we will not have any argument as to whether it is proper to give a hypodermic injection or whether it is improper. Therefore, the important subject, in my opinion, is not how to treat the injured, but how to prevent him from getting injured.

* * *

"I am glad that we have succeeded in getting the mine foremen of this district together. I want to say again that I intend to discuss the duties of a mine foreman; that is going to be my subject. I will handle it as well as I possibly can. The law of this state—the laws of every state in this Union, in fact, the laws of every country where coal mining is carried on—recognize the fact that the mine foreman is the most important official connected with coal mining; they recognize the fact that he should be the most competent man connected with coal mines. Why do I say that? Because there is not a state in this Union, there is not a country under the sun where coal is mined, that a mine foreman is not required to stand an examination and convince a board of examiners that he is competent to take charge of the mine and look after the welfare of the employes and look after the property of the operators before he is permitted to act as a mine foreman. The law, I say, recognizes the fact that he is the most important man connected with mining. In the state of Alabama our law requires that men shall have certificates of the first class in order to be competent to take charge of mines that generate explosive gases, and they require that a man shall have a certificate of the second class before he is competent to take charge of a mine that does not generate explosive gases.

"If the law makes you the most important man in and around the coal mine, then you certainly have a great responsibility. I sometimes believe that the mine foreman fails to realize, or in other words he does not realize, he doesn't comprehend the responsibilities that are resting upon his shoulders, both from a legal and moral standpoint.

* * *

"Now, gentlemen, regarding the first duty of a mine foreman, in my opinion. I am going to divide my subject into three different parts. What are the three most important duties of a mine foreman? The first important duty of a mine foreman and his first duty is to look after the safety of the employe. It is his duty to see that the mining laws are enforced; it is his duty to see that the employes do not violate any of the mining laws; it is his duty to see that they do not violate any of the rules of the company in regard to their personal safety. It is not enough, gentlemen, for you to say to a man, in my opinion, 'Don't you do that.' And, too, many of our mine foremen believe that

they have discharged their full duty when they say to a man, 'Don't you do it.' Gentlemen, that is not the case; you owe it to the man himself, you owe it to your employer, and you owe it to society in general, not only to tell a man not to do a thing that endangers his life, but you owe it to him to see that he does not do it. You are there for that purpose; you are there to see that he does not do it. That is one of the don'ts I am going to put in there, to see that he doesn't do anything that would endanger the life of his fellow workman or the property of a fellow employe.

"I find in going around the mines and investigating accidents, as required by law—and the experiences of my associates are about the same thing—I will say fully 60 per cent of the accidents that occur from falls of rock and coal and other causes the mine foremen will say to me: 'I warned that fellow not to do that; I told that fellow not to get on that trip; I told that fellow to set a timber under that rock; I told that fellow to pull down that coal not an hour before he got hurt or killed.' And the mine foreman sits back on his dignity and says: 'I discharged my full duty; I told him not to do it.' Gentlemen, that is not your duty. You may have discharged your legal duty when you have told a man not to do a thing, but you have a moral duty to perform, and your moral duty is to stay right there and see that that man sets that timber under that loose piece of rock and makes that place safe before you leave there; and if you do that I want to tell you that you will cut out 75 per cent of the fatal accidents that occur in Alabama from falls of rock and falls of coal. I have no patience with a mine foreman that will tell me he saw a miner working under a piece of rock and told him it was dangerous and then walked out to see him get killed.

* * *

"If I were a coal operator or superintendent of a coal mine and the mine foreman came and told me he was in a man's place 15 minutes or 30 minutes or one hour before the man got killed, or injured, and that he knew that rock was loose, and he knew there ought to be a prop under it, and that he knew it ought to be taken down, and he did not stay there to see that it was taken down, and that man's life was lost, or he was injured, I would certainly demand his resignation right away, and say he was not competent to take charge of that mine. I tell you why: Every fatal accident that occurs in a coal mine costs the operator money. I don't care whether he is legally responsible for it or not, the operators are human beings, and some of them are very sympathetic, and you know that from experience, I suppose. I do not know what per cent, but I will say 75 per cent—I don't think that is high enough—of the fatal accidents that happen around the coal mines, your operator has got to bear all of the funeral expenses. He has got to furnish the coffin and shroud, and he has not only got to do that, but it causes your men to reduce your output, and causes the mine to lay idle. Sometimes when you have a fatal accident it takes two or three days to get over it, and your output is run down, your men go to attend the funeral, and all that adds to the cost of the production of the coal and comes out of the pocket of the operator. Now, from a financial standpoint, you owe it to the operator to try to prevent every accident you can.

"I am not unmindful of the fact that accidents will occur in coal mines. I do not care how careful the mine fore-

man is, because I investigate accidents in coal mines where men lose their lives, or are injured, where there is no carelessness on the part of anybody; it is an unforeseen thing that nobody could see until the rock fell, or the piece of machinery broke, or something occurred to cause the accident. Accidents of that kind will occur and we expect them to occur. We will have accidents as long as we carry on our industrial business, whether coal mining or steel making or anything else, but the great trouble with the American people today is that they have come to believe that it is necessary to have those accidents in the operation of our business. Why, some men will get up and say, 'Those things are going to happen; it is absolutely necessary to make those sacrifices and lives to be lost, and for injuries to occur if our modern industrial system is to go on.' Now, I want to tell you that is not true. As I said before, 90 per cent of the accidents that occur in coal mines are attributable to the carelessness of somebody.

"It is not always on the part of the operator, not always on the part of the mine foreman, and not always on the part of the miner, but carelessness on the part of somebody

that caused that accident. Now, what we want to do is to try to eliminate that carelessness. There is no truer saying than that, Familiarity with danger breeds indifference or carelessness. You expose a man to danger constantly, I don't care what the danger is, whether on the firing line when the battle is raging or whether in the steel plant or coal mine, or on the railroad, the more he is exposed to that danger, the less fear he has of it and more careless he becomes. That is true with the miner as with everybody else.

"There is no more hazardous occupation than coal mining. Every time a coal miner, or mine official, goes into the mines, he doesn't know whether he is going to come out alive or not. There are so many ways he can be killed that he doesn't know whether he is going to get out or not. It is a hazardous occupation, an occupation that requires a great deal of care, and requires skill as well as care, and it requires carefulness, and the mine foreman is there to see that carefulness and that skill exist; he is there to see to it that these men make their places safe and see that they do not do anything that will endanger their own lives or the lives of their fellow workmen."

MADE MILLIONS BY A TRAMP'S AID

One of the interesting places to the tourist passing through northern Ohio is the home of the late millionaire, George H. Hopper, one of the prime movers of the Standard Oil Company. The Hopper home, with its spacious grounds and rubble wall surrounding the entire plot of ground, is located just outside of the quaint town of Unionville, O., on the automobile driveway between Cleveland and Buffalo. Passersby are given the impression at once that here wealth and happiness reign supreme. It is a pleasant sight with its thousands of trees, its graveled walks and massive old mansion; but underneath all, this house furnishes a story that is not generally known to the public.

Years ago Hopper was a poor, hard-working cooper. He came from England when the country was still young and the Standard Oil Company was unknown, and located in Cleveland, where he made barrels in which the oil was shipped to various parts of the country. Hopper had trouble with his oil barrels in that the paint on the outside would crack off as the oil would soak through from the inside. Many experiments were tried, but without much success.

One day while Hopper was bemoaning the fact that the paint refused to stick to the wood, a tramp walked up and asked him for a quarter. Hopper was angered and turned a glowering countenance on the tramp. The latter noted that the cooper was sorely troubled and asked the whyfore, whereupon Hopper related his ill luck. "That's easy," said the tramp; "fill your barrels with water, paint them and when they are dry, empty the water out; the water that soaks into the wood will prevent the oil from seeping through and cutting the paint."

The Hobo's Idea Good One.

Though dubious of the success of this scheme, Hopper tried it a few days later, and it worked successfully. The advancement in royalties Hopper received from this idea soon resulted in wealth, and at his death he left an estate estimated at \$2,000,000 or more. This stepping stone to wealth has since been succeeded by better ways of making barrels unbreakable, but the idea given him by the tramp was the means of securing for him the vast fortune he possessed.

After retiring from active life and building the man-

sion at Unionville, Hopper spent many thousands of dollars in advertising a reward for the return of the tramp in order that he might make the man, who furnished him the key to his fortune, wealthy. A reward of \$25,000 was offered for the tramp, but though the advertisement appeared in nearly every journal in the country, no word was ever heard from the tramp until a few weeks ago, when one appeared at the Hopper mansion and claimed to be the man who gave Hopper the suggestion. The Hoppers, however, are touring Europe now, and no definite action will be taken in regard to the matter until their return in the fall.

Out of gratitude for this one tramp, however, the whole army of "hoboes" has been benefited, for prior to his death Hopper set aside a portion of his funds, to be used in feeding every tramp that appears at the door. It is not an uncommon sight to see from a dozen to 25 tramps camped upon the spacious lawn, eating viands furnished them from the Hopper home. In the park is also what might be termed a "bunk-house" where the tramp that arrives late at night may rest his weary bones.

REBUFF TO UNITED MINE WORKERS.

The Canadian conciliation board refuses to recommend recognition of the United Mine Workers of America in its report on the labor difficulties at the collieries at Spring Hill, which has been forwarded to Ottawa. The United Mine Workers demanded recognition, while the company maintained that it should not be required to help support a foreign labor organization, the main body of whose members are working in the production of coal competing with the Nova Scotia product in the Canadian market. The board says that it seems unreasonable that the employees should ask for increased wages at present.

REDUCED COAL RATE FOR MONTANA.

The state railroad commission of Montana has been successful in securing a \$3.50 rate on coal from Bear Creek, Mont., to Spokane. Both the Northern Pacific and Yellowstone Park lines have assented to the rate, which is a reduction of 70 cents.

SPLENDID FIRST-AID CONFERENCE IN ALABAMA

The first meeting held under the auspices of the Alabama Coal Operators' Association for the discussion of mine accidents, first-aid to the injured and kindred subjects, took place at East Lake yesterday. It had its social as well as its practical side, and was regarded by operators, surgeons, superintendents and mine foremen as a decided success from every point of view.

The leading address was made by Dr. M. J. Shields, of Scranton, Pa., First Lieutenant in the Medical Reserves Corps, United States Army, whose specialty is first-aid work. Dr. Shields said:

"I have been engaged in this work for the last ten years and I have written papers for the medical journals and the technical journals, and those papers have been all on one line and pretty much alike. So this paper that I read today may be like that ditto story that the mine inspector from Illinois told in Scranton not long ago when men met there from all parts of the United States. Mr. Hillhouse was there, and it was an old story to him, but I think it is a pretty good story, and it explains what might happen in my address; that is, if many of you have read before what I am going to say. It seems that there was a Welchman—we have a good many Welchmen in our country—who was looking over his store book two or three days before payday, and he thought the store bill was rather large, so he said to Mary Ann, 'Did you get anything from the store after the first of the month order?' and she says, 'Nothing besides butter.' So he looked on the book, and there was on the 21st two pounds of butter, 60 cents; the 25th, ditto, 60 cents; the 28th, ditto, 60 cents. He said: 'Mary Ann, what is ditto? Did you cook them? I am sure I no eat 'em,' and she said, 'I don't know what ditto is.' 'Well,' he says, 'I am going to see that bloody storekeeper who put ditto on my book.' So he went to the store and said: 'John, what in the hell is ditto you put on my books? Mary Ann says she did not cook 'em, and I swear to goodness I didn't eat 'em.' John said: 'Why, David, two pounds of butter on the 21st, 60 cents, and on the 25th, instead of writing butter I put ditto, which means just the same.' He was satisfied and closed up the book and felt a little cheap, and went home and threw the book in the cupboard and sat down and never made any explanation to Mary Ann, and finally she said: 'David, did you go to the store?' 'Yes.' 'Then what did he say was ditto?' 'I am a damn fool, and you are ditto.' (Laughter.)

* * *

"Now, just a foreword to my brother physicians. In this first-aid movement and the training of men for taking care of injured men in the mines, you know the miner is on the firing line; he is right at the front of the battle; he is right there when the man gets injured. Now these first-aid to the injured men are to act as trained nurses would to the physician. They will give the physician and surgeon a cleaner wound to treat; if they are at all competent they will give the doctor a stronger patient, and doctors all like to make quick recoveries. They don't like to have long-recovering cases unless the patient is a millionaire. They like to have lots of cases, but they like to make quick recoveries. Don't understand me to mean that we are going to give these men just a smattering of knowledge, because those men who have a smattering of anything are worse off than if they were entirely ignorant. As I will state further on, there is no use in starting this movement unless you are going to keep it up and make competent men.

What is meant by the first-aid movement? It is an effort to train persons to intelligently assist those who have been injured in order that, if possible, the injury may be prevented from producing fatal results, or from producing a permanent deformity due to improper handling prior to the time when a surgeon or physician can take charge of the case. Although the movement is one that should be generally taken up in industrial works and even in the public schools, it is particularly applicable to the conditions about the mines where the surroundings are of necessity dirty, the clothes and hands of the miners and other workmen are necessarily soiled. Moreover, owing to the remoteness of the working place from the surface, a considerably longer period must elapse between the time of an accident and the arrival of a physician than in the case of an industrial establishment situated in a town or city. Again, difficulties in transporting a person underground are much greater than they are on the surface; hence, no matter how careful his fellow workmen may be, unless they have received instructions, a slight injury may be greatly aggravated through unskilful handling.

* * *

"The idea of first-aid to the injured had its inception in Europe, about 1880, by the organization in England of the St. Johns Ambulance Association; the Samariter-Verein in Germany, and First-Aid Corps in France, Belgium and Austria, as an outgrowth of the International Red Cross Society. The St. Johns Ambulance Association of England is an organization that extends throughout the United Kingdom, having branches or minor associations in every industry, including mining, railroads, iron works, foundries and among all the civil government employes. It was these men, taken green from the workshop, mine and railway and sent to South Africa during the Boer war, who won honor and renown in the hospital corps and had special mention in the surgeon-general's report.

"The Samariter-Verein of Germany received world-wide praise for their heroic aid in the great mine disaster at Courrières, France, in 1906, and the corps was photographed and labeled as 'Peaceful Invasion of France by Germany.'

"First-aid in military operations in the last decade has become as much a necessity as the commissariat, winning its first victory in the Franco-Prussian war in 1870, and adding to its laurels by the marvelous results attained in the Turco-Russian war in 1878, China-Japanese in 1895, Spanish-American in 1898, Boer-British in 1900, and the most brilliant of all, the Russo-Jap of 1905, where not four out of 1,000 wounded Japanese had blood poison after being injured, due to the most perfect first-aid ambulance corps that the world has ever seen.

* * *

"First-aid in America did not reach us until 1897, when some of the railroads put a few first-aid supplies on their trains and gave certain of their employes books of instructions. First-aid-to-the-injured societies were also started in several of our larger cities about this time. Canada organized branches of the St. Johns Ambulance Association. With the assistance of 25 miners employed in the Delaware and Hudson Company's mine at Jernyn, Pa., in 1899, I succeeded in organizing the first-aid corps for mine work in America. The men assessed themselves, took up collections and bought first-aid packets, books of instruction, bandages and splints. The company was appealed to, but gave no encouragement. We had monthly meetings,

consisting of lectures and drills, and in a short time I had an efficient corps of first-aid men in all parts of that particular mine. Then, the 1900 strike coming on, interest was lost and the corps became extinct.

"It was not until the summer of 1905 that I succeeded in getting any coal company to take up this movement (although I had persisted in my efforts so strenuously for six years that I came to be called the first-aid 'crank'), when Capt. W. A. May, general manager of the Pennsylvania Coal Company and the Hillside Coal and Iron Company, engaged me to organize a first-aid corps in each of the mines under his management, numbering about 40, and employing, in round numbers, 13,000. The following year, 1906, the Temple Iron Company took up this movement, and it has gradually spread until all the coal companies in the anthracite region of Pennsylvania have inaugurated first-aid in some form in or about their mines. Without boasting, I feel that I have the honor to have originated this humane work in the coal mines of America, in 1899, and the Pennsylvania Coal Company, the Hillside Coal and Iron Company, Temple Iron Company, and the Philadelphia and Reading Coal and Iron Company were the first coal companies to inaugurate this life-saving work in a systematic way.

The System Explained.

"After having had charge, as medical director, of the organization and training of first-aid corps of three large coal companies, I feel that I can in no better way tell how to organize and maintain corps in coal mines than to detail the system, plans, methods of training, etc., by which they are kept up at the various mines of these three companies:

"The mining operations of the three companies were first divided into 12 districts, each of those districts having several collieries and a number of openings. A general foreman or superintendent was placed in charge of each district and this official arranged for a suitable central hall, so as to be convenient for all the men in the district as a meeting place. The hall, of course, is large enough for practice drills and stretcher work. One employe in 20 was selected and invited to attend the meetings, thus making about 900 trained first-aid men.

"Employes were selected along the following lines: Men who are in and about the mines all day; men so selected as to have a first-aid man in each section of the workings; several outside men, and especially the driver of the ambulance; men neither too old or too young; men who stay with the company and not transients; and intelligent foreigners. This to include all classes of employes—namely, inside and outside foremen, fire bosses, inside bosses, engineers, pump runners, breaker employes, miners and laborers.

"Each of the corps met and adopted by-laws, elected its own officers of administration, consisting of president, vice-president and secretary, who administer its affairs under the general direction of the company. The foremen and assistants, in and outside and fire bosses, were requested to have at least three of the men under them present. Meetings were held in each district once a month, excepting the months of July and August. The time of meetings is from 7:30 to 9:30 p. m.

"Cards are given each member with the place and date of each meeting during the year, signed by the general foreman of the district. The meetings are called to order by the president, minutes read by the secretary, and then I give them a short talk on first-aid, illustrating by charts, diagrams, X-ray plates of fractures and by painting the location of the principal blood vessels and different important organs on the body of the human subject with colored crayons. I also illustrate wounds in the same way.

"The lecture is short, say 30 minutes, and is as free as possible of medical and technical terms. Following the lec-

ture a demonstration is given on a living subject in bandaging, stopping hemorrhages or applying temporary splints. This lasts about half an hour. After that I have the men themselves practice on a subject, going through such actual operations as performing artificial respiration, carrying the injured, dressing wounds, applying splints to fractures, and a stretcher drill. The meeting is closed with an 'experience' session, the men relating actual experiences they have had during the month past in dressing injuries, how they did it, and as far as possible the results obtained, the same being criticized and discussed by all members present.

"Each member of the corps is supplied with a first-aid packet (rubber cover), which he carries constantly in his working coat and wears a Red Cross button. He is also supplied by the company with a copy of my little 'First-Aid Hand Book,' containing simple instructions and illustrations of bandaging wounds and applying dressings to fractures; what to do in emergencies, etc. The book is of pocket size and contains not quite 100 pages. The first-aid men also have access at all times to the well-equipped mine hospital rooms, which are provided by the company."

Dr. Shields continued his lecture by telling of first-aid contests, similar to contests of volunteer fire companies and showing how such friendly rivalry stimulated interest in the work. He touched upon the social and elevating side of first-aid organization as well as the humane side. "It has," he said, "a tendency to uplift the men morally and since no race or creed is recognized, all are united in a glorious and humane work of doing good to their fellow men." (Warm applause.)

RHODE ISLAND "COAL MINE."

Edwin Chaplin of Boston has bought the coal mine property of the Harris Farm and Mine Company on Sockanosset hill near Providence, R. I. The purchase price was \$100, a \$245,000 mortgage covering the property. This property, which contains the famous Cranston coal mines, has been the subject of many transfers in recent years. Many years ago an attempt was made to mine coal on Sockanosset Hill, but, except as a landmark, the "coal mine" was unknown. About six years ago, however, a big brick building was built, and the New England Briquette Coal Company was formed to exploit the product of the mines. The briquettes, consisting of the Cranston coal, mixed with other inflammable substances and molded into egg-shaped chunks, were placed on the market, but after a short time the business was discontinued. The "coal mine" again became a joke until the Harris Farm and Mine Company deeded the land to Chaplin.

CANT HAUL THEIR OWN COAL.

Senator Cummins of Iowa has prepared a bill for the purpose of shutting railroads effectively out of the business of coal mining, directly or indirectly, by prohibiting them from hauling coal from mines owned by them. Under the recent decision of the Supreme Court, it is possible for a railroad to carry coal which comes from a mine owned by a corporation in which it has shares of stock. It is the purpose of Senator Cummins' bill to shut this off. The Supreme Court decision allows a railroad to mine coal and transport the coal so mined, providing it is sold to another party before the shipment begins. Senator Cummins says there is no way of preventing this and it is for the states to say whether railroad companies shall be allowed to mine coal. Over this the federal government has no authority.

All the coal dealers of Bluffton, Ind., have announced a strictly cash basis for fuel and will refuse all credit hereafter. Prices have been cut 15 to 20 per cent.

MODERN METHOD OF MAKING LIQUID GAS

Consul-General R. E. Mansfield, of Zurich, has investigated and prepared the following account of the operations in Switzerland of the modern method of making liquid gas and of its utilization:

While the principle of producing liquid gas was discovered nearly a century ago, and such chemists as Faraday (1823), Andrews (1861), and scientific investigators like Cailletet, of Paris, and Pictet, of Geneva (1877), left valuable records relating to the subject, they succeeded in establishing only a theory that "all gases pass into a liquid condition, provided they are submitted to a sufficiently low temperature and to a sufficiently high pressure." To make a practical application of this theory, and work out a process by which liquid gas could be utilized for general purposes and produced at a cost that would make it a commodity of commercial value, has occupied the attention of various inventors in recent years.

The constantly increasing scarcity of natural fuels, and the consequent advance in the cost have increased proportionately the interest and the importance of substitute or artificial fuels of substances for producing light and heat.

The first plant for the manufacture of liquid gas as a commercial commodity was established in Augsburg, Bavaria, in 1904, under a process invented by Herr Blau. Considerable success has attended the enterprise, a great many installations for heating and lighting having been made by the company in Germany, and some of the German railways have adopted it as a means of lighting passenger coaches.

In 1907 a stock company for the manufacture of liquid gas was organized in Zurich, under the name of the "Swiss Liquid Gas Company" and a factory, with a capacity of 480 pounds of liquid gas a day, was established at Bassersdorf, near Zurich. The apparatus for the purpose of transforming crude oil into liquid gas, with which the factory is equipped, is the invention of L. Wolf, a resident of the village of Bassersdorf. The product is described by the company as "a transportable liquid which is simply evaporated as used, and can be used for lighting, heating, cooking, soldering and welding purposes."

Factory Equipment—By-Products.

The factory building is a plain one-story stone structure, 40 by 72 feet, and was built at a cost of \$24,000. It is equipped with one 12-horsepower explosion gas engine, which furnishes the motive power to drive the compressors working at high speed. The engine is supplied with gas produced in the process of reducing the crude oil to liquid gas. The furnaces in which the retorts are heated are also partially supplied from the same source, about one-half of the fuel consumed being surplus or exhaust gas. The application of this by-product reduces the cost of fuel for operating the plant to the minimum. In addition to the residue of gas, a considerable residuum of tar is secured in the process. From the tar may be extracted lubricating oils, benzole, creosote, and materials suitable for street and road dressing as a dust preventive.

The material from which the liquid oil is produced in the Bassersdorf factory is the residue or refuse of crude oil after various ingredients such as benzine, vaseline, etc., have been extracted. It is imported from Austria. At the factory the crude oil is transferred from a reservoir into the retorts by an automatic process. The cost of the oil used in the Swiss company's factory is about 7 cents per gallon.

After passing through the process of heating, condensa-

tion and cooling, and the various carbonizing and other substances have been separated from it, the liquid gas is placed in steel tubes of various sizes holding 20, 40, 60 and 80 pounds each, in which form it is ready for use. The tubes containing the material are accepted by the railways and other carrying companies without restrictions or special provisions, as the gas is nonpoisonous and is three times less explosive than ordinary gas. The liquid gas is utilized by attaching one of the tubes to the special apparatus manufactured by the company, which contains a regulator, gage, etc.

Installations and Usefulness.

The Bassersdorf concern, which has passed beyond the experimental stage, now has over 100 installations in different towns and cities in Switzerland, all of which are declared to be entirely satisfactory to the purchasers. In a descriptive circular regarding the production of liquid gas, its uses, etc., the company says:

The liquid gas is obtained by the dry distillation of raw petroleum and of by-products of the lignite and oil industries. The raw materials are decomposed in retorts by the action of a high temperature; the vapors and gases produced then pass through the tar separators and the cleaner, losing here the easily condensable gases (tar, benzine, etc.), as well as any other deleterious and malodorous by-products that may be present. By means of Wolf's patent apparatus, and the use of cold and pressure, a separation of the difficult liquefiable gases, such as hydrogen, methane, etc., from the more easily liquefiable ethane, propane, pentane, etc., is obtained. These are then liquefied, carbureted and filled into steel transport cylinders provided with a valve and sold as "liquid gas." It is easily transportable and utilizable and has a high illuminating and heating power. The prime cost is not greater than that of other kinds of gas produced in small plants. The installation costs are low and the manipulation is simple and without danger. The gases not liquefied are used in the working of the factory.

It is claimed for the liquid gas that it is nonpoisonous and its explosiveness is about three times less than coal gas. Specific gravity of the liquid gas (water: 1) . . . about 0.568
Specific gravity of gaseous liquid gas (air:

1)	about	1.021
1 liter gaseous liquid gas weighs (at 0° and 760 millimeters pressure)	grams	1.3201
1 cubic meter (35.314 cubic feet) liquid gas weighs under like conditions	kilos	1.3201
Maximum heating value per cubic meter of gas (at 0° and 760 millimeters pressure)	thermal units	16.046
Minimum heating value per cubic meter of gas (at 0° and 760 millimeters pressure)	thermal units	15.137

The company's descriptive circular says:

The liquid-gas installation consists of the transportable cylinder containing the liquid gas, of a gas tank fitted with a pressure gage and an adjustable safety valve; also of a regulator for adjusting the pressure of the gas.

Heating, Lighting and Welding.

The advantages and conveniences offered by liquid gas present for it a wide field of usefulness. Among the various uses to which it may be applied are the heating and lighting of residences, public buildings, hotels and manufactories and street lighting and cooking purposes; also chemi-

cal and technical laboratories, soldering and welding. If mixed with oxygen, it produces a heat so intense that an ordinary bar of iron 1 inch in diameter can be cut in two almost instantly by placing it in the flame of a liquid-gas burner. This concentrated heating power makes it available, and especially desirable in the smelting and forging of iron and steel.

Concerning its application as a means of welding, etc., the company claims for liquid gas that—

Any required grade of heat favorable for the metal to be welded can be produced by simply regulating the pressure and quantity of gas. The metal melts and flows together without oxidizing; no pressing, no hammering, is necessary, and the metal does not turn brittle. With a medium heating value of 15,600 thermal units, liquid gas affords the cheapest and best method for the welding of metals.

The success of the Basersdorf factory has demonstrated the fact that liquid gas can be manufactured and sold at a profit in competition with coal gas and electricity, as nearly every town and village in Switzerland is supplied with artificial-gas works and an electric-lighting plant. Yet within a short space of time the company has placed over 100 liquid-gas installations, and the demand for its product keeps the plant running full capacity day and night. When it is understood that the factory was built more as an experiment and for the purpose of demonstrating the practicability of manufacturing liquid gas as a material for heating and lighting than as a commercial enterprise, and the fact that all the material used is imported, which greatly increases the cost of production, it can be readily seen that greater profits might be obtained from the manufacture in the United States, where the raw material, such as waste from rock-oil refineries or other kind of bituminous oils, are plentiful and comparatively cheap.

Factory Being Built in Boston.

The Zurich company, which possesses international patents, has disposed of the rights to manufacture under its process in France, and a plant with a capacity of 1,056 pounds of liquid gas per day is in course of construction in Paris and will soon be ready to begin operations. A factory equipped with the Wolf patent apparatus is being built in Boston.

The Swiss plant turns out 480 pounds of liquid gas per day, besides a considerable quantity of tar. Only four men are employed in the work of operating the factory, which runs night and day. No special mechanical skill is required in the work, which reduces the cost of labor to the minimum. For the construction and installation of plants for lighting, heating, cooking, industrial and laboratory purposes about twenty mechanics are employed. These men also act as soliciting and selling agents and promoters of the company's interests in towns where there are no coal-gas plants.

The finished product is put up in different sized metal tubes, holding 20, 40 and 80 pounds each, the market price being 15 cents per pound, or \$3 for a tube containing 20 pounds. This gives the daily output of the factory, amounting to 480 pounds, a total value of \$72.

Estimated Cost of Production and Profits.

The Zurich company estimates the cost of production, profits, etc., on a plant with a capacity of 44 pounds of liquid gas per hour, as follows:

Forty-four pounds per hour, 1,056 a day, for 300 days in the year, 316,800 pounds; market value, 15 cents per pound.....	\$47,520.00
Cost of production: Raw material-gas oil, 2,240 pounds daily, or 672,000 pounds for the year, at a cost of 0.724 of 1 cent per pound.....	\$4,825.28

Carbureting: 422 pounds daily, 126,600 pounds for the year, at 38.6 cents per pound	4,876.66
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Fuel: 1,815 pounds daily, 544,500 pounds per year, at 3 cents per pound	1,633.50
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Wages and salaries:

Four workmen, at \$1.16 per day each for 300 days	1,392.00
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One foreman	605.00
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One clerk	465.00
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Total cost per year.....	13,927.44
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Profits for one year	33,592.56
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Estimated cost of building a liquid-gas factory with a capacity for producing 1,056 pounds per day, \$5,000. Cost of machinery and apparatus for operating the plant, \$40,000.

Pamphlets, charts and blueprints showing factory building plans and equipment for liquid-gas manufacture will be loaned to interested firms by the Bureau of Manufactures, Washington, D. C.

NATAL COAL OUTPUT GROWS.

The coal production of Natal for 1908 amounted to 1,669,774 long tons, valued at \$3,587,432, an increase over 1907 of 139,731 tons. The output was classified as 1,413,145 tons of large, 186,029 tons of nut, and 70,600 of small coal. Natal coal exported overseas to foreign ports amounted to 201,098 tons and to the Cape Colony 245,817 tons. The exports overland to other colonies amounted to 106,242 tons; bunkered by vessels at Port Natal, 710,777 tons; consumed on the Natal Government railways, 254,166 tons; and consumed otherwise or stocked in the colony, 511,674 tons.

The overseas trade shows a large increase, as it was only 56,850 tons in 1907. It is to be assumed that a considerable quantity of this coal is samples and does not represent a fixed and steady demand, although there is no doubt that the demand for Natal coal in foreign countries is growing, as the exports to India, Ceylon, Mauritius, Madagascar, Beira, and even to ports in Australia where coal was shipped in 1907, show a decided increase for 1908.

The Associated Collieries are putting forth every effort in seeking new markets, and they are very sanguine of their ability to prove the superiority of their coal to that of other fields. Sample shipments have been made throughout the Straits Settlements and the East, and one company has forwarded 50 tons to San Francisco.

OHIO OPERATOR BLAMES WALL STREET.

B. A. Worthington, receiver for the Wheeling and Lake Erie Railway, once attempted to give Ohio coal operators a square deal by reducing the rate on lake-bound coal from Ohio mines, but Wall street cracked a whip over his head and Mr. Worthington failed to make the reduction, according to the testimony of C. E. Maurer, Cleveland coal operator, before the Ohio Railroad Commission, which is investigating the alleged excessive rate of the Wheeling and Lake Erie on lake coal.

BIG DEVELOPMENT NEAR ANNISTON, ALA.

Capt. R. F. Kolb, who is well known in the industrial and political life of Alabama, has completed the details this week for the organization of a company with \$600,000 capital for the development of rich lumber and mineral lands in Shinbone valley, just beyond Shinbone mountain, in the Anniston district. Associated with Captain Kolb are O. M. Alexander of Anniston, W. B. Davidson of Montgomery, P. M. Clark and C. W. Huffman of Lebanon, Tenn., and others of Boston.

WEST VIRGINIA COAL PRODUCTION IN 1908

The total production of coal in West Virginia in 1908, as reported to E. W. Parker, of the United States Geological Survey, was 41,897,843 short tons, having a spot value of \$40,009,054. Owing to conditions more favorable for the cheap production of coal in West Virginia, her percentage of decrease during 1908 was less than in Pennsylvania, Maryland, Alabama, and Ohio. In a preliminary statement issued early in January, 1909, it was predicted that the output of coal in West Virginia would show a decrease between 10 and 15 per cent, which would reduce the tonnage to an amount about equal to that of 1906. The decrease was 6,193,740 short tons, or 12.88 per cent, from the output in 1907, and the 1908 production was 1,392,507 short tons less than in 1906. The decrease in Pennsylvania (bituminous coal) was 21.95 per cent, in Maryland 20.89 per cent, in Alabama 18.57 per cent, and in Ohio 18.27 per cent. The decrease in value of the production in 1908 was \$7,837,576, or 16.38 per cent.

Another reason why the percentage of decrease in West Virginia was less than in the states named is the fact that, except in the Kanawha district, few of the miners in the state have organized and there was no suspension of operations pending the adjustment of the wage scale. Although some vigorous attempts have been made from time to time to organize the coal miners of West Virginia, most of the mines continue to be operated on either the "open shop" or the non-union basis, though many of the mines in the Kanawha region have for several years been operated under agreements with the miners' union. The strike record for the state was a total of 501 men who were idle for an average of 144 days each. Only four mines reported a suspension due to labor troubles.

The Ten Hour Day Prevails.

The ten-hour day prevails in most of the mines, 403, employing 39,550 men, working ten hours a day in 1908; 180 mines, employing 14,426 men, worked nine hours, and 30 mines, employing 1,242 men, worked eight hours.

West Virginia more than any other coal-producing state depends on market conditions outside of her own borders for the disposition of her coal product. The manufacturing industries of the state are comparatively unimportant when considered in connection with the large and cheap supply of high-grade fuel. Probably more than half of West Virginia's coal is shipped away to support manufacturing industries in other states.

The coal mines of West Virginia in 1908 gave employment to 56,861 men, who worked an average of 185 days, as compared with 59,029 men for an average of 230 days in 1907. The average production per man for the year 1908 was 737 short tons, against 815 tons in 1907 and 849.5 tons in 1906, but the average daily production per man increased from 3.54 short tons in 1907 to 3.98 tons in 1908. There was a substantial increase in the proportion of coal mined by the use of machines in 1908 as compared with the preceding year, although the actual machine-mined tonnage decreased. The number of machines in use increased from 1,533 in 1907 to 1,574 in 1908. The machine-mined coal decreased from 17,627,925 short tons to 16,653,174 tons, but the percentage of the machine-mined product to the total increased from 36.65 to 39.75. Of the total number of machines in use in 1908, 599 were pick machines, 899 chain machines, 53 long-wall machines, and 23 chain-shearing machines.

According to John Laing, chief of the West Virginia

department of mines, the record of accidents in the coal mines of the state in 1908 was in favorable contrast to that of the preceding year, but the number of accidents was still large. The fatality record of 1907 was unusually bad because of the disaster at Monongah, which alone caused 361 deaths, and the total number of men killed in that year was 729. In 1908 the number of fatalities was reduced to 313, the largest single disaster being a dust explosion in the Lick Branch mine of the Pocahontas Consolidated Collieries Company, in which 50 men are said to have lost their lives. Falls of roof in rooms caused nearly half of the deaths and also injured 431 men. There were 49 men killed and 285 injured by being crushed by mine cars; four were killed and six injured by powder explosions; seven deaths were due to shaft accidents; explosions of gas and dust caused 63 deaths; and 37 deaths and 211 injuries were attributed to miscellaneous causes. The death rate per 1,000 employees was 5.5 in 1908, against 12.35 in 1907, and the number of tons of coal mined for each life lost was 133,859 in 1908, against 65,969 in 1907.

The Future of West Virginia Coal.

Among the important recent developments looking toward increased production of coal in West Virginia has been the completion of the Virginian Railway from Deepwater, on Kanawha River, to Sewells Point, near Norfolk. This important outlet for West Virginia coal, the only railroad built from the coal fields to the seaboard, was completed in the spring of 1909 and will have a marked influence on the future production of the state. Another noteworthy development has been the construction of the Coal River Railroad from St. Albans into the rich coal fields of the Coal River valley. This road has been purchased by the Chesapeake and Ohio Railway and will be an important feeder to that line. The Coal and Coke Railroad, extending from Charleston to Elkins and penetrating the coal fields in the central portion of the state, has under construction branch lines which will develop other coal fields. The indications are that when these railways are completed, West Virginia will again take second rank among the coal-producing states. West Virginia occupied second place in 1906, but fell back to third in 1907 and 1908.

The total production of coal in West Virginia to the close of 1908 amounted to 476,096,382 short tons, equivalent to an exhaustion of 715,000,000 short tons. Estimates by I. C. White, state geologist, and M. R. Campbell, of the United States Geological Survey, based on a recent study of the coal fields, place the original supply in West Virginia at 150,000,000,000 short tons. The apparent supply now available therefore amounts to 149,285,000,000 short tons, about 3,500 times the production of 1908 and 2,400 times the exhaustion represented by that production.

MADE A FORTUNE IN COAL.

Representative Bascom Slemph, of the Ninth Virginia district, and his brother have cleaned up between \$300,000 and \$400,000 in a Kentucky coal land deal which has just been closed. The Slemphs have been acquiring coal and timber properties in Kentucky, West Virginia, and Virginia for years. They are the owners of some valuable properties in those states. Recently a company was formed which took over their Kentucky holdings, the deal netting the Virginia Representative and his brother nearly \$500,000 profit. The Slemphs are still large holders of Virginia mineral and timber properties.

THE DEAN OF AMERICAN HUMORISTS

Twain Was Not Sick.

On the return trip to the United States from London on the Minnetonka some one told Mark Twain, on a rough, windy morning, that he looked seasick. "I'm not seasick," said the humorist. "You look it," the other persisted. Then Mark Twain laughed his short, gruff laugh and told a story. He began by saying that it never paid, either in jest or earnest, to tell people that they did not look well. He said, "There was a practical joker in a certain New York office. This young man put up a practical joke on the bookkeeper, a quiet, steady, serious chap. The joke was for every one to tell the bookkeeper that he looked very, very bad, indeed. It was wondered what effect this would have.

"It was a hot August morning when the joke began. The office boy started it. 'Ain't you well, Mr. Quill?' he said. 'Yes; of course. Why?' Quill asked. 'Why, ye look so pale,' said the boy. 'I feel all right,' said Quill, calmly, and he put on his seersucker office coat and set to work. But when the shipping clerk told him he looked ill, Quill frowned and said he had had a bad night—that was all. When the cashier asked him what made him such a queer color he said his heart felt strange. So, for an hour or two, Quill was tormented with anxious inquiries, full of gloomy forebodings, about his health.

"Finally, with an impatient, worried gesture, he threw down his pen and hastened to the office of the chief. He was gone perhaps five minutes. Then he came back again in the chief's company. 'Men,' said the chief, raising his hand to command the attention of all, 'as Mr. Quill is not well I have granted him a ten days' leave of absence. Please arrange to divide his work equally among yourselves till his return.'"

Beat Him One Way.

As Mark Twain and a friend were chatting at the summer home of the humorist, Quarry farm, near Elmira, New York, the conversation turned to the wealth of John D. Rockefeller.

"Just think of it, Sam," said the guest, "he has more dollars than there are hairs in that vigorous old thatch of yours."

"That's nothing," replied Mr. Clemens. "I have more dollars than he has hairs in his head."

Mark Twain's Agricultural Hints.

What strikes the London Spectator as being among the things that are most extremely funny are Mark Twain's stories of his editing an agricultural paper; of how, in the columns of that paper, he advised that "turnips should never be pulled; it injures them. It is better to send a boy up and let him shake the tree"; and of his putting forth the information that "the guano is a fine bird, but great care is necessary in rearing it."

Mark Twain's Advice to the Girls.

Mark Twain recently gave some advice to sweet girl graduates which was a little out of the ordinary in the way of commencement speeches. It was at the graduation exercises of St. Timothy's school in Catonsville, a suburb of Baltimore.

"There are three things," said the humorist, "that young ladies should never do on any occasion.

"First, don't smoke—that is, not to excess. I am sev-

enty-three, and for seventy-three years I have smoked to excess, so I am a living example.

"Second, don't drink—that is, to excess.

"Third, don't marry—that is, to excess.

"And now if you young ladies will refrain from all these things you will have all the virtues that any one will honor and respect."

Honesty the Best Policy.

In the address above referred to Mr. Clemens said that he wished to drive it home that honesty is the best policy.

"I remember when I had just written 'Innocents Abroad,'" he said. "My partner and I wanted to start a newspaper syndicate. We needed \$3 and did not know where to get it. While we were in a quandary I espied a valuable dog on the street. I picked up the canine and sold him to a man for \$3. Afterward the owner of the dog came along, and I got \$3 from him for telling him where the dog was. So I went back and gave the \$3 to the man whom I sold it to, and I have lived honestly ever since."

Consummation Devoutly to be Wished.

Years ago, during Mark Twain's journalistic career and before prosperity had reached him, he found himself with a note coming due and a total lack of funds with which to meet it. Half distracted, he was rushing round the city in a feverish hunt for funds to tide him over the trying time. He rushed a little too quickly, however, for as the tall humorist was turning a corner he collided with a little man and overthrew him. The victim regained his feet and yelled:

"You do that again and I'll knock you into the middle of next week."

"My dear sir," said the apologetic humorist, "do it by all means. If I can get through till then without breaking I'm safe."

Twain to the Ladies.

"Mark Twain," said a Chicagoan, "crossed the Atlantic with me on the Minneapolis, and his conversation made the captain's table very gay.

"The ladies continually encircled the humorist, and the last night on board he proposed a toast in their honor.

"The ladies," he said, raising his glass and bowing. 'The ladies—second only to the press in the dissemination of news.'"

A Brilliant Paragraph.

Mark Twain, at a publishers' dinner in New York, talked of his reporting days in Virginia City.

"We were trying a horse thief one day," he said, "and all of a sudden the big, burly scoundrel pulled off his boot and threw it at the Judge. It was a heavy boot, too. It was studded with hobnails.

"I am still rather proud of the way I wrote up that little incident, doing it neatly, and at the same time getting back on a rival reporter whom I disliked. I got it all in one paragraph—something like this:

"Suddenly the blackguardly thief, pulling off his boot, hurled it with all his might straight at the Judge's head. This desperate act might have been attended with most disastrous consequences, but, fortunately, the missile only struck a reporter, so that no harm was done."

Mark Twain's Rented Cat

Mark Twain, as is his custom, hides himself during the summer from the head hunters, those persons seeking autographs, photographs or interviews. One year he selected Tuxedo Park as his retreat, renting an old Colonial house until the latter part of September, when he returned to his New York home. There, during the heated days, Mr. Clemens wandered about the country byways or spent the time in various shady nooks in his grounds.

A visitor who succeeded in discovering his whereabouts found the great author in his famous suit of white flannels, seated under a tree petting a kitten.

"Where did you get it?" queried the friendly intruder.

For a moment there was a twinkle in the aged humorist's eyes; it was succeeded by a solemn look as he replied, "I rent it from a neighbor. You see, I cannot afford a cat—not even a young one."

Subsequently inquiry proved at least the first part of Mr. Clemens's statement to be true. He had actually rented the kitten for the summer season. What did he pay for it? Nobody knows what Mark Twain pays for anything. All the world is interested only in what Mark Twain is paid.

TO TAP VIRGINIA COAL FIELDS.

Capitalists are becoming interested in the proposed electric line connecting the agricultural districts of Lee county, Va., with the Wise county coal fields. The main line will be twenty-eight miles in length, between Jonesville and Big Stone Gap, with branch lines touching Norton, Dorchester, Blackwood, Imboden, Appalachia and Stonega, in Wise county, and Keokee, Yokum, Station, Hickory Flats and Mulberry Gaps, in Lee county. The coal fields in southwest Virginia are fast becoming a veritable beehive of industry, and the consensus of opinion is that with this new acquisition not less than 500,000 people will inhabit the rich territory to be covered, many acres of which are not now under cultivation and have been allowed to grow up in briars for lack of people to consume.

"SERVANT" AND ITS CHANGES.

"Servant" in the United States is often displaced by the world "help." But "servant" itself owed its vogue in England to the fact that it is a substitute for other words that had declined in dignity, such as "knave," which originally meant only "boy," but in time acquired a more and more slighting sense until it became intolerable.

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IMPORTANT LIABILITY DECISION.

(Continued from page 405.)

played at such places. The Appellate Court held that the language in the second count of the declaration complained of might be disregarded as surplusage, and that with that language eliminated, the count as it then stood was a good count. We think the Appellate Court rightfully so held. Furthermore, there was no controversy at the trial between the parties, over the fact that the place where appellee was injured was not marked of a danger signal displayed at that place, the position of the appellant being that the place was not dangerous, as its witness testified that the electric current was not turned on at the time, the plaintiff was injured, and it was urged that if it did appear from the evidence that the electric current was turned on, the dangerous condition thereby created was not within the terms of the statute. It is apparent, we think, that the jury was not misled by the language found in the second count of the declaration, and as the first and second counts of the declaration stated a good cause of action and were amply supported by the evidence, the trial court did not commit reversible error in denying appellant's motion to take the second count of the declaration from the jury or in overruling its motion in arrest of judgment.

"The appellant has also made some complaint against the instructions given on behalf of appellee and as to the action of the court in refusing certain instructions offered upon its behalf and refused. We think the instructions given for the appellee are substantially correct and were properly given, and that those instructions offered by appellant and refused were properly refused, as they asked the court to inform the jury that the danger incident to placing a live wire in the mine, unprotected and in a situation where it would be likely to come in contact with the cars and head of the mule which appellee was driving, was not a dangerous condition within the meaning of the Mines and Mining Act, and for which the appellant, in case of injury, could in no event be held liable to appellee for damages. This view is not correct, and the court did not err in declining to give the jury appellant's refused instructions.

"Finding no reversible error in this record, the judgment of the Appellate Court will be affirmed.

"Judgment affirmed."

BRITISH MINERS VOTE STRIKE.

The balloting of the members of the Miners' Confederation of Great Britain to decide whether a national strike should be declared in support of the Scottish miners, who are resisting a wage reduction of 6 pence a day in wages, was concluded July 28th, and resulted in 518,361 votes in favor of a general strike and only 62,980 against it. This unmistakable determination of the men to support their Scottish colleagues and the apparently equally determined refusal of the employers to agree to the miners' terms renders the work of intermediaries difficult. Another conference between the employers and the men will be held at the board of trade under the chairmanship of Winston Spencer Churchill, and unless a compromise is then reached a general industrial upheaval appears inevitable.

UNIFORM PER DIEM CHARGES FOR CARS.

President McCrea of the Pennsylvania Railroad, chairman of the per diem commission appointed by the American Railway Association, is expected to call a meeting of the commission within the next week or so, to take definite action on the proposed uniform per diem charges to be applied to every railroad in the United States.

With the return of prosperity some of the larger railway systems are said to have demanded that the new uniform rate be decided upon as soon as possible.

Several years ago the railroads agreed upon a per diem charge of 50 cents per car a day. When the business depression set in this charge was reduced to 25 cents a day. The claim is made that many of the smaller roads would rather pay a rental of 25 cents a day for freight cars than purchase new equipment and keep it in repair. For this reason many of the larger systems, like the New York Central and Pennsylvania, say it is impossible to keep their equipment on the home line.

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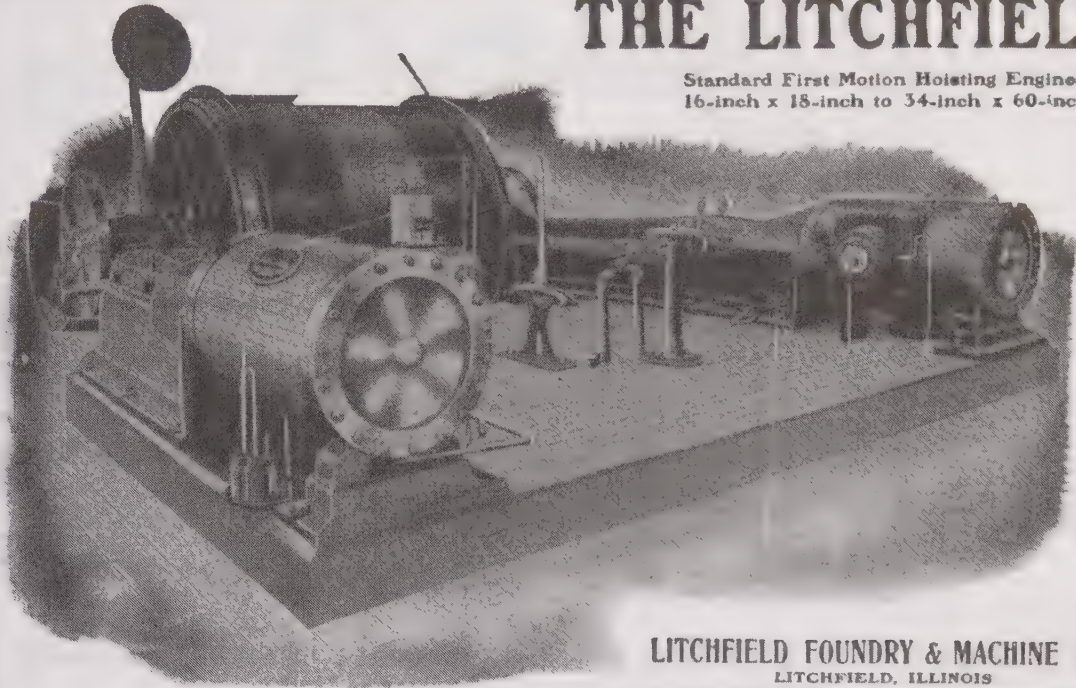
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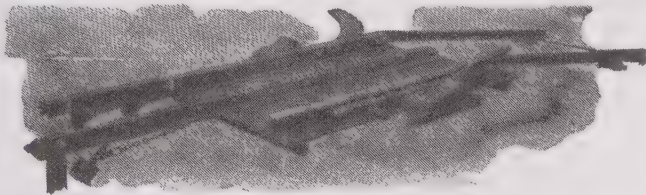
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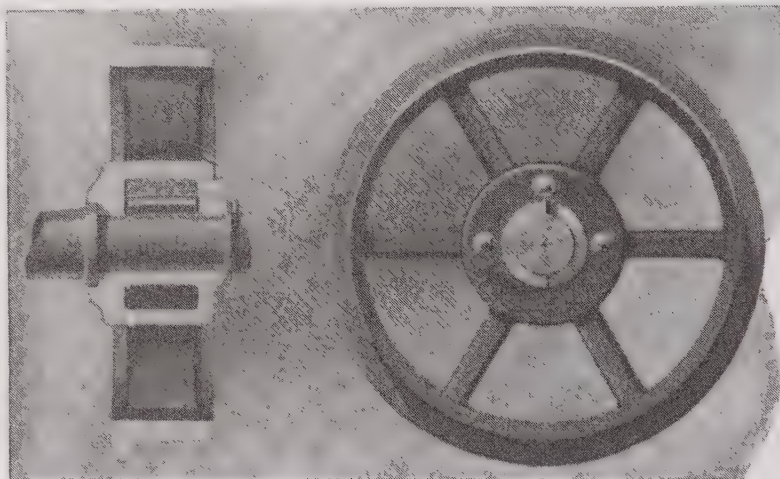
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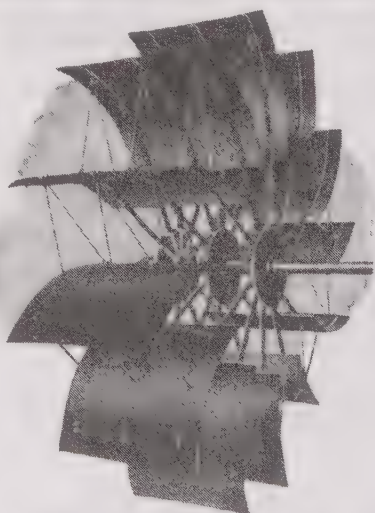
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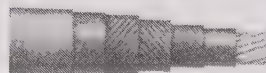
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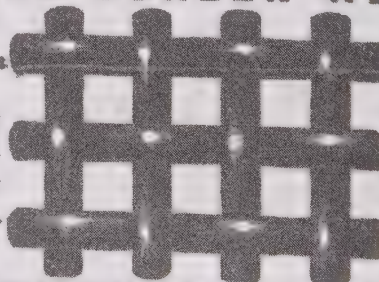


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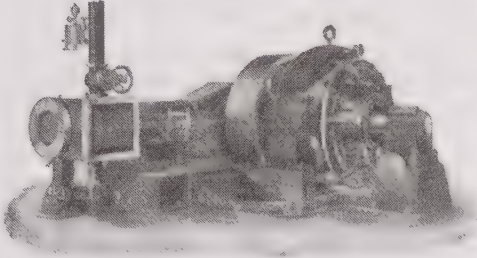
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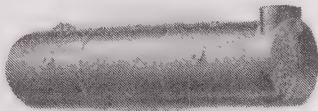
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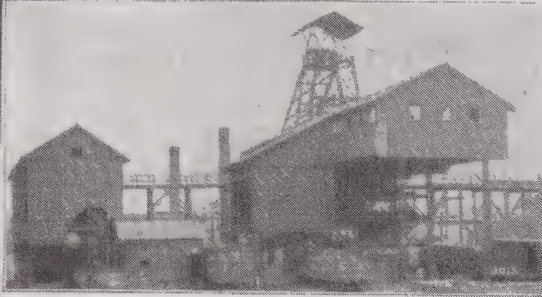
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GATHERED FROM THE EXCHANGES

Coal has been discovered four miles south of Garfield, Wash.

A German inventor has perfected a new motor railway car operated by gasoline, which, it is said, will displace many electric railway cars.

Saginaw, Mich., Federation of Labor is trying to defeat the award of the coal contract to West Virginia operators, which was recommended by the Water Board.

A new record in tonnage was made recently on the Virginian Railway when a single locomotive pulled ninety coal cars of fifty tons each from Roanoke to Norfolk.

Railway accidents and casualties in the United Kingdom for the year 1908 were as follows: Killed, 1,043; injured, 7,984; against 1,117 killed and 8,811 injured in 1907.

United States Consul Thomas H. Norton sends from Chemnitz, Germany, a report on an ingenious new method for the cheap transportation of acetylene in compressed form.

The National Fuel Company, of Denver, of which Harry Van Mater is president, has purchased the Lucas coal mine, near Lafayette, for \$150,000 and in future the property will be known as Monarch mine No. 2.

The largest single lump of anthracite coal ever mined was shipped by the Kingston Coal Company to the Yukon-Alaska Exposition at Seattle for exhibition. It weighs 1,800 pounds, and contains about 80 cubic feet.

The Fairmont & Lincoln Coal and Coke Company, recently organized at Fairmont, W. Va., will shortly begin the construction of a plant at Kingmont. The coal has already been opened and a plant of 800 tons capacity daily has been ordered.

The annual meeting of the Brier Hill, Pa., Coal & Coke Company was held at Brier Hill, when the officers were elected. H. H. Stambaugh was reelected president; R. C. Steese, vice-president; John Pod, treasurer, and Thomas McCaffrey, secretary and superintendent.

The new Coleman mine of the Maryland Coal Company has just been opened at St. Michaels, Pa. This mine is two miles from South Forks, on the Pennsylvania railroad. The shaft is one of the largest in the country and has a capacity of hoisting 3,000 tons of bituminous coal a day.

The time allowed by Venezuela for the free importation of apparatus for the burning of alcohol, including motors, lamps, especially for the use of alcohol in the production of light, and not adapted to other fuel, and the necessary parts of such lamps, including wicks, burners, mantles, etc., has been extended for one year from April 18, 1909.

The settlement of the suit of the United States against the Utah Fuel Company and others, involving title to certain coal lands in Salina canyon, resulted in the government regaining the lands involved. The registrar and receiver of the United States land office in Salt Lake City have received notification that the case is closed and these lands are again open to entry. The lands are valued at \$25 per acre.

In razing the walls of the oldest building in Pottsville, Pa., a casket was unearthed which contained lumps of primitive coal and a unique document. The piece of parchment states that these lumps were chippings taken from peculiar "black stones" by Colonel George Shoemaker, of Pottsville, in 1829, before the commercial value of anthracite was known as a commodity for domestic or even industrial purposes.

The Bear River Coal Company will soon add another producing mine to the long list of coal properties in Wyoming. At Almy the company has opened a shaft for 300 feet and will soon put on a night shift and begin shipping.

Sagamore Coal and Coke Company, which is located at Mora, W. Va., and which is one of the operations owned by the Pocahontas Consolidated Collieries Company, will resume operations at an early date. This plant has been idle for about three years.

The Thompson-Connellsville Coke Company let contracts for the erection of 400 new ovens at its two plants in the lower Connellsville field, Thompson Nos. 1 and 2. The improvement will double the company's capacity, the company now having 400 ovens.

The anthracite coal tonnage for the month of May amounted to 5,063,873 tons, compared with 6,088,116 tons during the same month in 1908, a decrease of 1,024,243 tons. For the year to May 31 the tonnage aggregated 27,046,872 tons, in comparison with 26,963,590 tons in the corresponding period last year.

The large railroad systems which enter Duluth are just now giving their attention to the fuel supply question. One of them has contracted for about 1,000,000 tons of steam coal and has 200,000 tons now on dock at the head of the lakes. Another large system, which has 300,000 tons on dock, is closing contracts for 600,000 tons more.

Coal land valued at \$4,000,000 has been bought by the Jones & Laughlin Steel Company near Marianna, in Washington county, Pa., making one of the largest deals of this kind in this district in years. The price paid per acre is not known definitely. This coal is a deposit which experts declare is an outcropping of the old Connellsville Basin seam, or a coal equal in quality.

The Jamison Coal and Coke Company, of Pittsburg, of which Senator John M. Jamison, of Greensburg, Pa., is president, completed the deal for the purchase of 7,000 acres of coal land near Fairmont, W. Va., is preparing to open up the new property immediately. Two shafts will be put down to an 8-foot vein of the Pittsburg seam. The company expects to be ready for coking operations within a year.

The Colorado Fuel and Iron Company is finishing its first year under the control of John D. Rockefeller, and it will have the best report in its history to make at the next annual meeting of the stockholders. The company, instead of having a \$1,000,000 deficit, will show a surplus, and, instead of having to bring iron ore from Duluth at a loss, has secured and developed immense properties of its own.

By selling out his entire holding of stock in the Big Muddy River Coal Company, Theodore R. Troendle retires from the management of that company with a fortune. The purchasers of the stock are the Southern Illinois Coal Company, which is composed principally of Massachusetts capitalists and is headed by William M. Wood, multimillionaire, and president of the American Woolen Mills, of Boston. Mr. Troendle remains in Hopkinsville, Ky.

The strike at Charleroi coal works, Charleroi, Pa., which kept 400 men idle for three weeks, has been settled and the mine resumed operations at once. Settlement was made by National Vice President E. S. McCullough, of the United Mine Workers, and carries with it a substantial victory for the miners. Under the agreements entered into by Mr. McCullough with Manager Jesse Johnston, of the company, the latter agrees to pay the shot frers.

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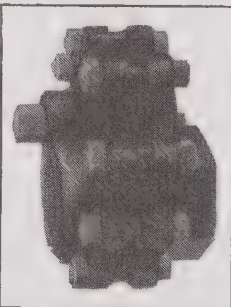
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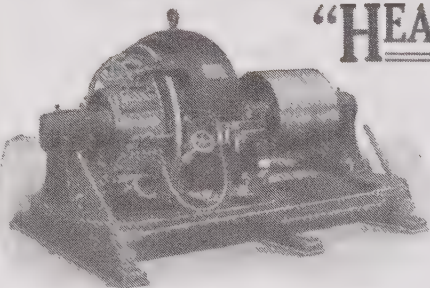
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CHICAGO, ILL., AUGUST 10, 1909.

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A STUDY IN WOOD PRESERVATION

**Representative of the United States Forest Service Reports to the Spring Valley Coal Company
Results of an Examination Made to Determine the Possibility of Treating
Successfully the Timbers with Wood Preservatives.**

In January of the present year S. M. Dalzell, general manager of the Spring Valley Coal Company, had a representative of the United States Forest Service examine the timbers in that company's mines with a view to determining the possibility of treating them with wood preservatives with a view to obtaining a prolonged life. Mr. C. P. Winslow made this examination and submitted a report which contains so much valuable general information that No. 73 secured the consent of Mr. Dalzell to print portions of the report here. The purpose of this examination was to study, first, the species, form, and character of timbers used; second, to ascertain their length of service under the several existing conditions; and, third, to learn the possibility of prolonging the life of this timber by the application of preservatives to arrest decay. Owing to a severe fire, it was impossible to inspect the timber conditions at No. 2 mine. The remaining four mines, however, were carefully examined, the results and conclusions being incorporated in Mr. Winslow's report.

The species of timber in most general use throughout the mines are white, red and black oaks, elm, maple and poplar; with the exception of the ties, which are sawn, practically all the timber is placed without the removal of the bark. All classes of oaks are used extensively for the heavy timbering in the main entries, as well as for the mine ties. The lagging and timbering in rooms and temporary entries consists mostly of red and black oaks; the inferior oaks, elm, maple and poplar, together with any other available inferior species, are used for the props at the working face, while the cogs are composed of odd lengths of any of the above species.

* * *

Much of the timber is purchased from southern Illinois and shipped by freight to the mines, although a considerable portion is obtained from small dealers and is delivered by wagon. Practically all of the better grades of oak are purchased in the southern part of the state, and although there has been little change in the cost of this grade of timber during the past few years, it must be noted that 4½-foot props have increased twenty per cent in cost during the past four years, while 6-foot lengths of mixed oaks have increased about 16 per cent over their former cost. Strictly white oak ties could formerly be purchased for 7 cents each, while now the price for mixed lots of white and black oak and elm is 8 cents. It is thus seen that timber prices are steadily rising, and at some future date it may become necessary to substitute inferior timbers for the oaks now so extensively used.

The causes of the destruction of mine timbers may be classified under four distinct heads: (1) Insects, (2) abrasion and mechanical wear, (3) breakage from crush or squeeze, (4) decay. It was found in the examination that

destruction by insects was so small as to be negligible, that mechanical wear or abrasion was the important feature with respect to the life of the mine ties, and that breakage from crush or squeeze was the main cause of destruction of main timber sets. Decay, however, was noted in many instances in these main sets. It therefore must be given considerable attention, since the weakening of the timbers from this cause bears directly upon the breakage so extensively found. A brief discussion of what decay is, its causes, and how it may be reduced, is accordingly given in the report.

* * *

Decay is the decomposition of wood fiber by the action of low forms of plant life, generally known as "fungi." By their action, wood is changed in its physical and chemical properties and is said to be decayed. The conditions necessary for the growth and development of wood-destroying fungi are a requisite amount of (1) water, (2) air, (3) food materials, and (4) heat. If any one of these factors is entirely eliminated there will be no decay. It is evident that in the mines neither air nor heat can be avoided. Therefore, to increase the natural life of the timbers, either the water contained in the wood must be practically done away with or the wood itself upon which the fungi feed must be treated with a powerful germicide upon which the fungi cannot thrive. Although only a small amount of water is necessary for the development of the fungi, there is a sufficient amount even in seasoned wood to cause its decay. Green wood, which contains more water, offers a more favorable medium for the growth of the destructive fungi. Peeling enhances seasoning, and is, therefore, of distinct advantage in prolonging the life of timbers. Under dry conditions, peeling and seasoning of timber will reduce its moisture content sufficiently to materially retard decay. Furthermore, thoroughly seasoned timber has far greater strength than green, in many cases being 100 per cent stronger. Comparing timber on this basis, it is seen that of two sticks, similar as to size and species, the thoroughly seasoned timber will support, practically twice the load of the green. Seasoning would therefore reduce the size of a timber requisite to support a given load, thus producing a saving in the initial cost of timber. On the other hand, when a seasoned timber fails from an excessive load, it will break suddenly. No warning is given by bending prior to final failure, as is the case with green timber. This is a detrimental feature, and in the temporary workings of the mines where the roof pressure is great and some warning is desired before the final breakage of the timber, it would be unwise to utilize thoroughly seasoned material.

The major part of the work consisted in examining the timbers used below ground which, from the character of

the mines and the Long Wall system of obtaining the coal, may be considered under several heads, as follows: (1) Props at the working face; (2) timbers in the rooms and temporary entries; (3) timbers in permanent entries; (4) lagging, cogs and lyes; (5) mine ties; (6) timber used in shafts. Briefly, the conclusions under each of these heads may be thus summarized as follows:

For props the cheaper woods are used, fully 80 per cent of the total cost of mine timbers being for props. But a few months' service is required of them, so that there would be no economy in using a preservative. By using a less number some economy might be effected. The same is true of timbers in rooms and temporary entries. Timber in the permanent entries must have longer life, and consequently are studied more closely, in two classes.

In entries ventilated by fresh intake air few evidences of decay were found. In entries ventilated by return air or leakage from the face or return air entries, the percentage of decay was greater. Cogs, ties, legs and collars, though made of inferior grades of wood, showed little decay, and indicated no need of preservatives. With the lyes the conditions were found different, however, large, round, unpeeled timbers forming the legs, and a far greater proportion of them showing decay than of the square-hewed timbers forming the main entries, which had been in position and remained sound for twenty years or more. Some collars were broken from decay. The advantage of peeled and seasoned timber is here clearly demonstrated.

A vast number of ties used in the miles of mine track, and these are mostly destroyed by mechanical wear. If decay alone were considered, they should receive preservative treatment, but with mule haulage the effect of the treatment would be lost. With electric haulage the treatment of the ties is recommended, but not under the present system.

* * *

The squared pine timbers used in shafts have given satisfactory service, though kept extremely wet by the warm return air from the shaft striking the cold air at the surface. Near the surface, where there is less moisture, it is said to be likely the timber will first decay. Above ground small opportunity is found for the use of treated timbers, but the arrangements for handling the waste rock, including trestles, rock chutes and track over which the rock is hauled to the dump piles, contain a considerable quantity of large, square timbers and small ties; if replacement of any of these should become necessary, treated timbers are recommended. A similar argument is applied to the company's washery. The discussion is briefly summarized as follows:

1. The quantity of props annually used is so great that an effort should be made to reduce the number used per ton of coal cut, but owing to their short period of service, it is useless to consider methods of increasing their natural decay-resisting properties.

2. The timber used in rooms and temporary entries serves its purpose in a short time, when it is lost by gobbing. This is a necessary evil, and since the timber cannot be reclaimed, it is inadvisable to consider methods of preserving it from decay.

3. A long service is desired from the timber used in the permanent entries. Decayed timbers were frequently noted in these workings, but more especially in those ventilated by return air and leakage from return air. Methods for preventing this should therefore be considered, first, with respect to the entries ventilated by return air, and secondly, with respect to those ventilated by intake air.

4. There would be no economy in applying preservatives to the timber used in the cogs, and for lagging. Attention, however, should be given the timber used in lyes.

5. The mechanical wear from the mule hoofs would

soon wear through the protected zone of a treated tie, thus destroying the effect of the preservative. It would be inadvisable, therefore, to apply a preservative treatment to this material.

6. The replacement of timbering in shafts and structures above ground is too infrequent to be of much importance. When it does occur, it would be of advantage to use treated material.

* * *

It is thus seen that it would be of benefit to use timbers in the permanent entries and lyes which will resist decay more effectually. To accomplish this, valuable hints are given, the first being to use timber from which the bark has been removed, as indicated by the results of the examinations. While these cost slightly more than the unpeeled timbers, counting the cost of setting and resetting, they would have to last but 8 per cent longer to make buying the peeled timbers an economy, so that even by adding 50 per cent to the durability there would be a substantial gain in buying the peeled timbers. As pointed out, the seasoning is much enhanced by removing the bark, giving more strength and less weight, the latter reducing freight charges. As regards the placing of the peeled timbers, it is recommended that the white oaks be reserved for the return entries and only red oaks used for the intake entries. White oaks should be used where possible in all the lyes in either class of entries. The application of a preservative to further increase durability is not recommended because no decay was found where the bark had been removed; because of the cost of a treating plant beyond the benefit to be derived; because a large proportion of the timber is broken before decay commences.

Treated timber is recommended for use in all replacements of timber in the shafts, washery and structures above ground. This might be purchased from the large commercial treating plants, obviating the cost of installing a plant at the mine. If this expense be too great the "brush" treatment is suggested, using creosote or some other efficient preservative.

A detailed statement is appended showing the results in detail of every examination made in the various parts of the mines examined.

ROADS CAN'T OWN COAL STOCK.

The effect of the decision of the Franklin County, Ohio, circuit court in the case of the state against the Hocking Valley Railroad is that railroads have no legal right to own stock in coal companies or competing lines. This affirms a ruling of the court given some time ago. The company secured a rehearing after the decision of the United States supreme court in which it was held that under certain conditions railroads could engage in the coal business, but the circuit court rules this decision has no bearing on the Ohio case and that there is no federal question involved in it. The Hocking Valley sought to exercise control over certain coal companies and the Toledo and Ohio Central and the Kanawha and Michigan railroads.

WILL DEVELOP NEW IOWA FIELD.

Boone, July 29.—General Manager J. L. Blake, of the Ft. Dodge, Des Moines & Southern Interurban Company, has announced the purchase of extensive coal fields north and south of Ogden, in Boone county, Ia. The company owns over 2,000 acres of the best land in the county, and will develop the large coal field embraced. The plan is to make traffic arrangements with the M. & St. L. for the time being, then put in extensive switching facilities of their own. The consideration is not given. Blake says the developments are to be pushed.

ORGANIZATION OF THE OPERATING FORCE

In the present day of tense organization and close watching of all points, every industry is working out the best plan by which it may secure the most complete results, at the lowest comparative cost. This necessity exists probably to a greater degree in a coal mine than in most other lines of business. In a discussion before the superintendents of the Fairmont Coal Company some time ago, W. H. Bailey, presented his idea of the organization that should prevail in the operating force of a coal mine, which is valuable to every man engaged in the superintendence of coal mine operations. Mr. Bailey said:

To be economically successful in mine operation, the different forces, their proper organization, placing and discipline requires careful thought and care. The different divisions of the working force of a mine can be classed under the following heads:

- 1st. The mining, loading or producing force.
- 2d. Cutting coal by electricity or air.
- 3d. Hauling by mules or other power.
- 4th. General laborers, trackmen, slatemen, timbermen, etc.

These are the interior forces. Taking up each individual force or division, we find that no matter how perfect the mining or producing, or either of the divisions may be organized, nothing good in the way of successful operation can be accomplished unless each of the other divisions are equally well organized, because each separate force is like one of the component parts of a machine, all must work in unison and harmony before good results can be obtained. Friction in the management of the interior affairs is bad and must be avoided. One master mind must assume the direction of affairs within the mine; no matter how many working divisions the working force consists of, there must be but one person in charge of said forces, and he should be the mine foreman.

* * *

There should be under and subordinate to him the heads of the different divisions. Each director of such division or force must be held responsible for the work of his force, and the mine foreman must be responsible to his superintendent for the proper directing of all the forces. The working forces must be kept as compact as the conditions will allow. Group the mining or producing force into as compact a territory as possible, and this will naturally force a grouping of each of the other forces. A failure to do so proves the organization to be incomplete. This grouping of forces will reduce the cost of operation, as it will reduce the number of people required under the present scattered system. Under the present system a great part of their time is put in in going from district to district. Group the work to be done and less men will do it. This also holds good in the case of drivers and horses, mine cars and mining machines. Where the operating forces are concentrated, less mine cars are required, as the cars are in constant use and not standing idle on some side-track for hours at a time. Less mining machines would be needed as the work to be done by them would be grouped and not scattered over a large part of the mine. When the work is scattered a large part of the working time of the machines is taken up in moving them from place to place.

In all machine mines each two loaders should be given two places adjoining each other. Two loaders should be compelled to work together, they having two places: one to

be loaded out while the other is being cut, each place being cleaned up and put in condition for the machine before they are allowed to begin the loading out of the other place. The machines in a machine mine should work double shift, with two crews (all being partners), one of which should work in the day-time and one in the night-time. A board to be known as the machine board should be placed at some point where all loaders and machine runners would pass it on their way to and from work. On this board should be marked the names and numbers of all headings where the cutting is being done by machines, the miner marking on said board the place or places cleaned up and the cutter rubbing out all places cut on their shift. By working the machine night and day the number of machines would be reduced one-half. Another saving would be in the power. As we now work, our electric and air plants are overloaded at times. Reduce the number of machines working at one time and better results will be obtained.

* * *

Hauling is a very important factor in mine operation. All points of assemblage should be as near the working face as possible. Long horse hauls should be avoided at all times. The rolling stock of a mine should receive as much attention as that used on railroads. Therefore, beginning with the first, or mining force, we find it very necessary to place no more miners or loaders on or in a district than can be properly served with cars. By a given number of horses to do the hauling, that is to say that if one horse can only haul the amount of coal that ten loaders can load, no more than that number should be put at work in said district, unless ten more can be added thereto, for the following reasons: If only five more are added, another horse is needed, and if one horse can haul the coal from ten loaders, and five more are added, it would either reduce the amount of coal coming from each working place or cause the employing of an extra horse in this district. Then if the additional number of men were less than ten the cost of handling this coal would increase. To simplify it, let us say that only five more loaders were added to this district and one horse. The earning capacity of the horses and drivers would be reduced one-fourth, assuming that a horse can haul all the coal that ten loaders can load.

Another reason why only enough loaders should be grouped in any heading or district, either for one, two or three head of stock to take care of is to avoid all delays in working out blocks of rooms or pillars, as delays cause a loss of coal and working material, adding to the cost of production. Delays call for reposting, tracking, draining and many other things, such as repairing tracks, doors, stoppings, overcasts and power lines, workings, etc. Therefore, a place begun should not be allowed to drag along for years before being finished.

* * *

Under the second heading or division of the working force is the cutting of coal by electricity or air so as to obtain the best results from our coal-cutting machines. The working places to be cut should be grouped. The more compact they are the better results will be obtained. And if the rules in force in nearly all machine mining districts in the great coal regions of this country were adopted in this field a great saving would result therefrom. Said rules compel machines to work double shift. Four men constitute a crew; all being partners. Two men work the machines in the day turn and two at night. That all ma-

chine-cut places be worked by two loaders, said loaders having two rooms side by side. That one of the places must be cleaned up and put in condition for the machine before they are allowed to begin loading out of the other. Such rules would reduce the number of machines now required under the single-shift plan. Would also reduce the number of working places in a mine, with a greater production of coal, as under such rules no men or places would be idle on account of not having places cut. The capacity of the machines would be increased by a grouping of the places to be cut in any district. Better power would be given with the same generating plants as are now used. Less capital would be needed under this system than is required under the present one. Blocks of rooms would be worked out quicker, which would save the cost of retracking, timbering, draining, etc.

Under the third heading or division of the working force, we come to one of the most, if not the most important force in mine operation, that of hauling, whether by electric or air motors, ropes, horses or mules. It is generally understood that the cost of cutting and unloading coal are fixtures, but the cost of hauling depends largely on management, and raises or lowers with good or bad management. Therefore, the subject of haulage should receive great thought and attention from those in charge of this division of mine operation. First—Great care should be given in the selection of horses, mules and drivers intended to work together on a heading or district, for the following reasons: If more than one head is used on a heading or district the capacity of each of the others is governed by that of the lowest. Example, if there are four horses or mules working, gathering coal on a heading or district, and one of these is slow, they are all slow. Again, one good and one bad make two bad. Again, three fast and one slow make four slow. Therefore, stock intended to work together in any district should be graded, the good or fast put together in a district, and slow or poor in another. In this way a large factor causing delays is eliminated.

* * *

Another bad practice used at some of our mines where there is more than one head of stock working in a heading or district is that of having a coal hauling horse to move the mining machine, waterbox, or anything other than coal cars, for the following reason: If four mules are used on a heading or district hauling coal and one is taken to move the machine every time it is to be moved, all four are delayed, which is the same as using four mules and four men to make said move. This practice should therefore be discontinued at once. Only under the most pressing circumstances should the coal hauling stock be used in making such transfers.

Another important point in hauling, whether by motor, rope or horses, is the location of the assembling stations to which the gathering is done. These should be advanced from time to time up to and as near the working faces as possible. In doing this you will often be able to work stock that under the condition of long hauls you would be unable to work without adding greatly to the cost, they being unfit to work up to and with the same dispatch as the other stock engaged in said heading or district. With points of assemblage located near the working face, slow and partly crippled stock can often be used to good advantage. Nothing kills off mine stock as quickly as long runs. Very often the empty or light loads are hauled up heavy grades. This is very trying on good stock, but not as trying as the long runs they are compelled to make coming out with the loads. For under the grade conditions they are compelled to travel fast to keep from being caught and crippled by the loads. Therefore, long horse hauls

should be avoided, as they play havoc with stock, the heavy stock in particular. Mine stock should be carefully fed, stabled, harnessed, cleaned and shod. Shoes should be made to fit their feet instead of their feet made to fit the shoes. I am sure it will pay to give the mine stock, upon which so much depends, the very best of care and treatment.

* * *

And now we come to the last or fourth of the interior forces, that of general laborers, consisting of trackmen, timber or slatemen, ditchers, pumpers, etc. This force is an important one in mine operation and should be carefully selected, not on account of their cheapness, but their usefulness. Men who have a clear understanding of the service required of them; men who can be trusted to carry out the instructions given to them by their foreman; men whom you need not watch; men who will save the property of their employers; men who have ever in mind the fact that the lives of those employed within the mine largely depend on their care and faithfulness in the discharge of their duties.

I wish again to call your attention to the following facts:

1st—That if your miners and loaders are grouped, less mine cars will bring you much better results than are obtained where they are scattered.

2d—Fewer men, horses, drivers, machines, mine supplies and assistant pit bosses will bring as good or better results at a much less cost.

3d—Watch your supplies closely. Whether in use or not supplies depreciate. This is especially true of posts. A post or two means 10 cents. That does not mean to avoid the use of supplies when necessary, but it does mean decidedly no abandoned rails, ties or posts in old entries and rooms. Remember always that money saved is the easiest money earned.

THE CHURCH AND LABOR.

Harmony between capital and labor can be one of the greatest accomplishments of the church, believes Dean Shailer Mathews of the University of Chicago divinity school, who lectured on "The Social Test of the Bible" at Chautauqua, N. Y.

"If the church is to bring sanity into the social movement," said Dr. Mathews, "it must get into touch with that movement. Preaching by itself will accomplish little. The church must put the spirit of brotherhood and sacrifice into every one of its members, particularly into those who are in touch with the unprivileged masses.

"A Christian employer or a Christian member of a labor union is a point of contact between the church and the changing order. Christian ideals must be incarnate in Christian men before social forces will be Christianized.

"The church has a doctrine of the individual that no hard and fast system of socialism, however noble and ethical, can duplicate, if, indeed, as a matter of self-preservation, accept. The point of attack, so to speak, is in the case of socialism, environment and in the case of Christianity the individual."

FIRE AT AN ALABAMA MINE.

Spontaneous combustion caused a conflagration at the Searles Coal Mines, in Tuscaloosa County, Ala., and the tippie, incline and coal washer were destroyed, causing a loss of \$90,000. Insurance to the amount of \$50,000 was carried. The mines will be closed down until a new tippie can be erected which will take about three months time. The output at these mines is about fifteen hundred tons a day. The Alabama Consolidated Coal and Iron Company own the mines.

BOTTOM COAL QUESTION IS UP AGAIN

Indiana Miners Claim it is Too Hard for Them to Mine and File Complaint — Report by Counties of Indiana Coal Production — Mines Resuming Operation and More Work Expected the Rest of the Year.

The men in Vandalia Mine No. 69 have complained that the coal is too hard to mine successfully, have brought the matter before the joint executive board of the mine workers and operators of the Indiana bituminous field, and it looks as if the old bottom coal dispute, which has given the district officials considerable trouble during the past few years, will have to be thrashed out again. Members of the mine committee and the check-weighmen of the mine have given their opinion of the quality of the coal, and they seem to have opposite views of the substance. The matter was taken up recently at a conference of President Rollins, Board Member Dooley, Superintendent O'Connor and General Manager John Hewitt, and consideration was suspended after nearly three hours of unavailing discussion.

Billtown and Burnett Mines Resume.

At a meeting of the local whose members have been on strike at the O. S. Richardson mine at Billtown, Brazil, Ind., Secretary William Garrigus read the message from President Rollins, District 11, United Mine Workers of America, ordering the men to return to work. By this the strike was officially declared off, and when the whistle blew at the mine the next morning the miners returned to work. The trouble over which the strike arose was taken in hand by International President Lewis, who will endeavor to settle the differences.

By the same decree the miners at the Summit mine at Linton, and the Burnett mine, returned to work. In all, some 600 miners returned to work this morning after laying idle for four weeks. Agreement has been reached by the operators' association and the district executive board of the miners. Both sides have agreed to accept President Lewis' decision as final and they will abide by it.

The past summer, according to several old miners in the block coal field, has been the worst for fifteen years. Many of the miners have used up all of their last winter's savings and are now almost in a desperate condition. Several families claimed that they have been compelled to reduce their table board greatly below their average meals to make ends meet. All now are anxious to see the time grow better in the block coal field.

"There Was No Violence."

Twenty-five American miners from Shelburn, Ind., went over to Carlisle to serve notice on 15 French miners employed by the Carlisle Coal and Clay Company that they must get out. Superintendent Gustav Stievenart left Brazil about six months ago to take charge of the company's mine at Carlisle and since that time there has been friction between him and the miners, who charge that he has been gradually crowding out the American employees and substituting foreign labor. When the men arrived Sheriff Weible, of Sullivan, was sent for and came at once in his automobile. He was met at the station by a mob of people and when he discovered what the trouble was he acted as arbiter in the matter, appointed a committee to wait on Mr. Stievenart and went with them. Stievenart promised to give the places in the mine to Americans and then the miners went to see all of the Frenchmen and warned them to get out of town immediately. The foreigners packed up their belongings at once and all of them left. The local paper

complacently says: "There was no violence of any sort and the whole affair was carried out in a quiet and businesslike manner."

Indiana Production in 1908.

Tons of coal produced and wages paid to miners in 1908 by counties:

Counties—	Tons Produced.	Wages Paid.
Vigo	2,617,915	\$2,239,464.83
Sullivan	2,585,993	2,193,550.85
Greene	2,257,646	1,767,935.38
Vermillion	1,139,609	1,012,142.99
Clay	1,029,161	997,286.65
Parke	602,945	639,925.52
Knox	427,999	298,959.11
Pike	424,965	345,966.06
Warrick	424,055	299,663.21
Vanderburg	253,774	266,235.22
Gibson	170,421	163,179.24
Davies	43,185	58,075.21
Fountain	15,849	18,468.20
Perry	3,729	4,018.97
Totals	11,997,304	\$10,304,869.65

The report continues:

"The table shows a decrease in the output for the year of 1,253,411 tons, or 9.4 per cent, under that of 1907. The decrease was due almost wholly to the commercial and manufacturing depression brought about by the monetary panic of 1907-8. Of the coal produced 852,960 tons are block coal and the remainder bituminous.

"The block coal, mined in Clay and Parke counties, is used almost wholly for domestic purposes, and its output was not, therefore, much affected by the stringency in money matters. This is shown by the fact that there was a loss of but 22,273 tons in its output. The amount paid for the mining of block coal was \$1,035,947."

Big Demand for Railroad Coal.

The Vandalia Railroad Company has suffered considerable loss and no end of annoyance because of the petty thefts of coal from cars standing in their large yards at Donaldsonville, Ind. At first the thefts were very small, resulting in just a few lumps of coal being surreptitiously taken from the loaded cars standing there. The thieves have grown very bold lately and the quantities of coal stolen increased from a few lumps to wagon loads. People have been visiting the railroad yards of late with wagons, carts, baby buggies, stacks, wheelbarrows, etc., and the drain became very heavy. Two offenders have been arrested and fined and the coal is being closely watched.

Work in Indiana.

Although there have been many miners out of employment altogether and many others working only part of the time in Indiana, it is said that the workers in this state have enjoyed more general prosperity than those in the other states. In Pennsylvania, Ohio and Illinois many thousand miners have been out of employment. Indiana miners are expecting better times the rest of the year.



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When Old Age Comes.

BURGES JOHNSON.

If God grant me old age
I would see some things finished; some outworn;
Some stone prepared for builders yet unborn.
Nor would I be the sated, weary sage
Who sees no strange new wonder in each morn.
And with me there on what men call the shelf
Crowd memories from which I cull the best—
And live old strifes, old kisses, some old jest;
For if I be no burden to myself,
I shall be less a burden to the rest.

If God grant you old age,
I'll love the record writ in whitened hair,
I'll read each wrinkle wrought by patient care,
As oft as one would scan a treasured page,
Knowing by heart each sentence graven there.
I'd have you know life's evil and life's good,
And gaze out calmly, sweetly on it all—
Serene with hope, whatever may befall;
As though a love-strong spirit ever stood
With arm about you, waiting any call.

If God grant us old age,
I'd have us very lenient toward our kind,
Letting our waning senses first grow blind
Toward sins that youthful zealots can engage,
While we hug closer all the good we find.
I'd have us wordily-foolish, heaven-wise,
Each leading each frail succor to withstand,
Ungrudging, ev'ry mortal day's demand;
While fear-fed lovers gaze in our old eyes,
And go forth bold and glad and hand in hand.

—Harper's Magazine.

We fail to find that the tariff on anarchists and pauper criminals was changed.

If it be true that a hot summer is followed by a cold winter, it would be well to hunt a dealer who will let you run a coal bill with him.

If you do not find anything to interest you in this issue of FUEL, you certainly are not interested in anything pertaining to the coal producing industry.

The new tariff bill is said to increase the duties on luxuries only. It raises the tariff on socks about two cents a pair—and thus is Simpson, erstwhile of Kansas, endorsed.

It is all very well to smile when the railroad and the coal operator tries to induce you to buy your coal now—by and by the smile will be gone, though not on the face of the other fellow. There was a coal merchant who smole when the wholesaler told him "buy coal." With the snow and the rain all his customers came, and they drove him right into his hole.

For a real fairy tale in the coal business commend us to the plan to mine coal in Rhode Island and the promises that it will amount to a million tons a year. It has never been found possible to burn this coal on account of its hardness, but somebody is said to have discovered something that can be rubbed on the coal and thereby make it burn brilliantly and beautifully. And the stock is in demand according to the claims made.

The city council of Clendennin, W. Va., is going to have a good town or know the reason why. They have passed ordinances forbidding under heavy penalty any woman riding astride within the corporate limits, and have done likewise as to all persons, men or women, who swear within the confines of the town. Any person who takes a bath in Elk river within a mile of the geographical center of the town will also be taxed.

There isn't an advertiser in FUEL's columns who is not worthy of the absolute confidence of the coal operator who is in the market for the products they advertise. In every case the people represented in FUEL are the best in the trade. There are others, but they will come in after a while. An advertisement in FUEL goes to the desk of the man who is going to do the buying. The earlier you come in, the more of the early business you are going to get.

FUEL presents elsewhere a summary of the interesting and valuable report prepared by a representative of the United States Forest Service on the timbering of the mines of the Spring Valley Coal Company, made at the instigation of General Manager S. M. Dalzell. The recent agitation for the preservation of mine timbers both as a measure of safety to life and to property and as an aid to the conservation of the timber resources, and the appearance before representative coal operators of this state of men connected with this work was followed by Mr. Dalzell's determination to take advantage of their expert knowledge, and the result

can but be gratifying to him and to his company. The possession of such information will undoubtedly enable the company to effect saving worth while in the cost of their timbers, and the example of progressiveness should be followed by others. Conditions differ in different mines, so that one section can hardly be governed exactly by conditions in others, but the completeness and suggestiveness of this report should be, and doubtless will be, a stimulus to many progressive coal operators of the state.

THE BRIQUETING OF COAL.

The attention now being paid to the briquetting of fine coal and of the lignite which abounds in many parts of the Northwest and Southwest has resulted in the careful study of the conditions under which briquetting may be profitably and successfully carried on. The leading designers of plants for this purpose have given the subject much study, and men of experience have done well to go into the business of designing and building plants for briquetting. Perhaps there is no man in the country better prepared for this work—certainly there is none more competent in all the West, if anywhere—than is C. J. Malcolmson, now with Roberts & Schaefer, of Chicago. Mr. Malcolmson was identified with the briquetting plant of the Rock Island Coal Company at Hartshorn, Okla., from the beginning of its installation through its successful inauguration of operations, found out some valuable improvements, and so has had the opportunity of both theoretical and practical study of the subject.

Mr. Malcolmson's paper on the briquetting of coal, read before the second annual convention of the International Railway Fuel Association at Chicago some weeks ago, was such a complete and educational presentation of the entire subject of briquetting coal that it has since continued to increasingly attract the attention of those interested. With the view of giving the widest possible circulation to this paper, it will be printed in full in an early issue of FUEL. All the drawings and photographs used in the article as presented will be reproduced, and the article will thus be an epitome of all that is now certain knowledge on the matter of briquetting. The former contribution of Mr. Malcolmson to FUEL, in which he described the new plant he designed for Kansas City, proved so strong an attraction that the extraordinarily large issue was exhausted before the demand for it was supplied.

The interest in briquetting has continued to grow, and in order to supply as far as possible the demand for this issue a large number will be printed in addition to the regular issue. Those who were disappointed in getting extra copies of the former issue would do well to get in line at an early date so that they will not be disappointed again. All orders will be filled in the order in which they are received, and when all are gone no more will be printed. The article will require nearly twenty pages of FUEL to contain it all, and thus precludes a second publication. It has received so many encomiums that FUEL feels that it will long rank as an authoritative pronouncement on every phase of the subject discussed by the author. Despite its high value, the

price of the issue containing it will be the same as usual—a dime for one, a dollar for ten, if the cash accompanies the order. You send the money, we send the papers, and that is all—no sending out a multitude of bills for small amounts. There is no profit in it, and extra postage and work would make it a loss. Send stamps, currency, silver, gold, checks, money orders, or pennies, the latter by express prepaid.

William Green, president of the United Mine Workers of Ohio, has announced himself as a candidate for national president at the election to be held next December. For four terms he has served as district president satisfactorily to the 46,000 members of the organization, and aspires to lead the entire organization. The time intervening before the election will be spent in an active canvass of the miners. It is considered certain that President Lewis will also be a candidate, he having served but two terms, though as yet no definite statement from him has been made. Mr. Green's candidacy is inaugurated at the request of the members of the executive board of the Ohio district. Mr. Lewis is also an Ohioan.

From every section come newspapers calling attention to the warnings of the railroads against a car shortage the coming winter. There seems but one opinion on the matter among the railroads and those interested in preventing a coal famine. The grain must be moved, and everyone knows that there is more money in moving grain than in moving coal, so that it will be hard to divert the cars to hauling coal when the movement is once under way. There is but one safe plan, and that is to get the needed coal while yet there is time. Certainly the blame cannot be placed on the railroads or the coal operators this year when the famine comes, if it does come.

The farmers of Oklahoma, or of one section of Oklahoma, have formed a swimming hole trust and will allow nobody to bathe in any water on their respective farms without the previous payment of ten cents per. They own the earth and own the water, too. Pretty soon they will be emulating the example of the farmer who wished to charge a passing bicyclist for the air he pumped into his exhausted tires in the road adjoining the farm.

ONLY CASH GOES AFTER THIS.

Coal for cash only, this is the edict that is being issued by the several dealers in Council Bluffs. The new order of things is to go into effect, it is announced, on September 1. The householder who has heretofore been in the habit of putting in his winter's supply of fuel at the commencement of the cold weather and then paying for it on the installment plan will have to put down the hard cold cash at the time the dealer fills his bins or else buy a ton at a time and then pay the spot cash for it.

NORTH DAKOTAS' NEW COAL FIELD.

A shaft fifty feet deep has been sunk on the Berks farm, north of Jamestown, N. Dak., where coal was discovered recently, and operations have been temporarily suspended on account of the presence of gas. It is stated that a fine vein of coal ten feet deep has been located, not a fissure vein, but a blanket vein, extending for some miles to the north.

TEXAS COAL IN 1908 SHOWED AN INCREASE

The total production of coal in Texas in 1908, as reported by E. W. Parker, of the United States Geological Survey, was 1,895,377 short tons, having a spot value of \$3,419,481.

Texas was one of the few states which exhibited an increase in the production of coal in 1908 over 1907. Part of this increase was due to the continued decrease in the production of petroleum and in its use for fuel purposes within the state, this decrease amounting to more than a million barrels, or about 10 per cent, in 1908. Other reasons for the increase in coal production have been the rather rapid growth of the population of the state and the prevailing prosperous conditions, which were not in any material degree adversely influenced by the general depression throughout the country. The output of bituminous coal increased from 940,337 short tons, valued at \$2,062,918, in 1907, to 1,047,407 short tons, valued at \$2,580,991, in 1908, a gain of 11.4 per cent in quantity and of 25.1 per cent in value. The average price for bituminous coal advanced from \$2.19 in 1907 to \$2.46 in 1908. There was a decline of 2 cents a ton in the average price of lignite, but the production increased from 707,732 short tons to 847,970 tons in quantity and from \$715,893 to \$838,490 in value.

A branch line of the Wichita Falls and Southern Railway from Wichita Falls to the bituminous coal areas of Young county was completed in 1908, and that county entered the list of producers with a total output of 1,000 tons. The bituminous coal mines in McCullough county were idle in 1908, however, so that the number of producing counties—16—was the same as in 1907. The counties producing bituminous coal were Erath, Maverick, Palo Pinto, Parker, Webb, Wise, and Young, and the lignite-producing counties were Bastrop, Fayette, Hopkins, Houston, Leon, Medina, Milam, Robertson, and Wood.

The coal mines of Texas gave employment in 1908 to 4,400 men, who worked an average of 254 days, against 4,227 men for an average of 242 days in 1907. The average daily production per man in the bituminous mines was 1.23 short tons and in the lignite mines 3.23 tons. The average daily production per man, for both bituminous and lignite was 1.7 tons in 1908, against 1.61 in 1907.

There were six mining machines in use in the coal mines of Texas in 1908, a decrease from thirteen in 1907, and the machine-mined tonnage decreased from 36,100 to 15,000. In most of the bituminous mines of the state the men worked eight hours a day, but in the lignite mines the rule was ten hours.

M. R. Campbell's estimates of the coal areas of Texas place the bituminous fields known to contain workable coal at 8,200 square miles, with 5,300 square miles of area not so well known that may contain workable coal. The known lignite areas cover 2,000 square miles, while there are 53,000 square miles, extending from Sabine and Red rivers on the east and north to the Rio Grande on the southwest, which may contain workable beds of lignite. The estimated original supply of bituminous coal in Texas is placed at 8,000,000,000 short tons and that of lignite at 23,000,000,000 tons, making a total of 31,000,000,000 tons. There had been produced to the close of 1908 a total of 16,340,325 short tons, which represents an exhaustion of approximately 25,000,000 tons, or 0.08 per cent of the original supply. The coal left in the ground at the close of 1908 would be equal to 16,300 times the production of that year.

OPPOSED TO ANY REDUCTION.

The miners of the bituminous coal fields of central Pennsylvania have refused to yield to the proposition submitted by the operators favoring a reduction in the price for mining coal. The sentiment of the miners strong against any reduction and reports received at the district headquarters of the U. M. W. of A. in Clearfield opposed to the wage concession asked by their employers.

Patrick Gilday, president of District No. 2, U. M. W. of A., made the following statement: "The operators of central Pennsylvania have requested conferences with the officials of the United Mine Workers in order to see if the miners would concede to a reduction in the present wage scale. Several conferences were held between the operators and the district officers without result. The operators then took up the matter with the national executive board and President Lewis at Indianapolis, who emphatically refused to make any concession.

"At about this time the operators asked for a conference with the executive board of District No. 2 at Philadelphia. Out of courtesy this was granted them and at the close of the meeting the board was unanimous in declaring that there would be no concessions to the operators during the present scale year. I then promised the operators that I would refer the matter back to the miners to let them take action upon the proposition. I have heard from enough local unions to say that over 90 per cent of the men are of the same opinion as the officers of our organization and will not submit to any cut in the wage scale."

Word comes from Rossiter, Indiana county, that quite a large body of organized miners want to go to work at 55 cents per ton. This is one of the largest mines in the field, and has been idle since July 1.

ILLINOIS COKE PRODUCTION.

The coke industry of Illinois has gained prominence, first, by the construction in 1906 of 160 Semet-Solvay ovens at South Chicago, and, second, by the construction of 280 Koppers regenerative by-product ovens by the Illinois Steel Company at Joliet. Of the latter, which were begun in 1907, one-half were put into operation in 1908. The coal for these by-product ovens is drawn from the mines of Fayette county, W. Va. One other establishment making coke in Illinois in 1908 was the Gallatin Coal and Coke Company at Equality, which cokes Illinois coal in Belgian ovens. The production of coke in Illinois in 1908, as reported to the United States Geological Survey, shows a smaller percentage of decrease than in any other state of any importance in the coke-making industry, amounting to 362,182 short tons, valued at \$1,538,952, against 372,697 short tons, valued at \$1,737,464, in 1907, a decrease of 2.82 per cent in quantity and 11.43 per cent in value. The average price per ton declined from \$4.66 to \$4.25.

MRS. DEVLIN SELLING HER FARMS.

The late Charles J. Devlin during his life time accumulated a large number of farms in Bureau county, Ill., and these, together with his life insurance, proved to be an inheritance for his wife that otherwise could not have been obtained. Besides the farms secured from her husband's estate Mrs. Devlin inherited a few from her father, the late Henry J. Miller, so that all told she owns eleven farms in Bureau county ranging from eighty acres to 400 acres each. Mrs. Devlin now lives at Kansas City, where she has purchased a fine home, and she has decided to sell all her farms in Bureau county and invest the money around Kansas City. She is worth about half a million dollars.

COMPARATIVE IMFLAMMABILITY OF COAL DUSTS

Extracts from "Notes on Explosive Mine Gases and Dust," by ROLLIN THOMAS CHAMBERLIN,
United States Geological Survey Bulletin 383.

The statement has been made occasionally in mining literature, but apparently without very definite experimental basis, that the old dust along the main haulage ways, which has been long exposed to the action of the air, is more dangerous than the fresh dust close to the working faces. The reason for this belief, it has been stated, lies in the presence of oxygen occluded by the dust during its extended exposure to the air. The presence of a considerable amount of oxygen condensed upon the surface and in the pores of the dust would seem to be favorable to the rapid combustion of the coal dust when the exciting cause of the explosion appears. And as it has long been known that coal absorbs oxygen from the air, it was natural to conclude that weathered coal dust which has absorbed much oxygen must be more inflammable than dust from the same coal which has been exposed but a short time.

Tests on Differently Exposed Samples

To throw light on several phases of this question at once, two samples of dust, placed in a vertically held combustion tube connected with the mercury exhaust pump, were heated by slow degrees up to 450°C ., and the gas evolved at different stages was pumped off and analyzed. The first of these samples was old, weathered, but unexploded dust gathered from the main haulage way of the Darr mine; the second was a fine powder freshly prepared in the laboratory by pulverizing coal from the same mine. This fresh powder was placed as quickly as possible in the tube, and the air exhausted. In each experiment the exhaust air was collected and analyzed; then the tube was warmed and kept immersed in boiling water for a couple of hours, and the gas evolved was removed for analysis. After that the tube was heated on a metal bath successively to 225° , 350° , and 450°C . and kept at each temperature for several hours, and for each such period a portion of gas was obtained.

By this treatment, it was thought, could be determined not only the relative volume of combustible and noncombustible gas which the two different dusts can produce when heated up to 450° , but also the volume of oxygen which had been occluded by the dusts. At the same time, as the old dust came from an exploded mine, though unexploded itself and taken from a locality where the explosion flame had left very little evidence of its presence, it was thought best to treat, in addition, a sample of old dust which it was certain had never been at all affected by an explosion. For this purpose coal from the Darr mine was reduced to a fine powder in a mortar, spread out thinly upon sheets of paper in a laboratory hood which was not in use, and allowed to remain thus exposed to the air for a period of two months. It was then subjected to exactly the same treatment as the other two dusts.

Significance of Tests.

These three tests gave quite different results, and the variation appears to be highly significant. The old dust and, to a somewhat lesser degree, the dust exposed to the air for two months had lost a large proportion of their free methane and heavy hydrocarbons. Much of this loss was probably due to simple escape from the finely divided coal, as the experiments with bottle coal have shown that gas is continually escaping from coal and that the escape proceeds at an especially rapid rate, for a short time after

pulverization, from fine coal. This escape was a distinct loss of the most available explosive constituents. On the other hand, the old, exposed dusts yielded much more of the oxides of carbon and sulphur than the fresh dust. This indicates that simultaneously with the loss of the hydrocarbon gases a process of oxidation had been going on, which had converted a portion of the carbon of the coal into carbon monoxide and carbon dioxide and some of the sulphur into sulphur dioxide. The increase in the volume of carbon dioxide and of carbon monoxide was about the same; and this showed that, while there had been some complete oxidation to the dioxide, there had also occurred some partial oxidation of the coal to compounds readily decomposed by heat with the evolution of carbon monoxide.

Free oxygen formed only an insignificant portion of the gas obtained in these experiments and was regarded as most probably due to a slight leakage of air during the course of the heating process. In exhausting the air from the tubes, however, there was obtained, for two of the three samples, slightly more oxygen in proportion to the nitrogen than is found in pure air.

That exhaust air from a tube containing coal is slightly richer in oxygen than normal air was first noted by Trobridge, whose work confirmed the observations made by Bedson and other investigators that oxygen and nitrogen, the former preferentially, are absorbed by coal when exposed to the air. That portion of the oxygen absorbed from the air, which is thus readily released from the coal with a relief of pressure, may be regarded as occluded gas held by the coal in the free state. This gas comes off largely on the simple relief of pressure. But the volume of oxygen which comes off on the reduction of pressure is quantitatively only a small fraction of that which has been absorbed. Two hypotheses naturally present themselves. According to one, free oxygen still remains within the coal, but does not come off when heat is applied, because the heat causes it to unite chemically with the coal. The other is that after the absorbed oxygen has been removed by the reduced pressure, very little of the gas remains within the coal in the free state. The second hypothesis, that the greater part of the oxygen absorbed has already entered into chemical combination at ordinary temperatures and that little uncombined oxygen remains in the coal, seems the more probable.

Absorption of Oxygen by Coal.

Although comparatively little free oxygen can be extracted from coal, experiments show that very large volumes of oxygen are rapidly and steadily absorbed by coal. It was knowledge of this fact that has suggested belief in the greater inflammability of the long-exposed coal dusts. But this idea is based on the assumption that much of this oxygen remains in the coal in the free state. The experiments with dust indicate that, with exposure to the action of the air, there is a development of the oxides of carbon and sulphur within this dust, or of compounds which give off these gases at moderate temperatures. Coal bottled with air for a few days gives off a much higher proportion of carbon dioxide than if placed in a vacuum. But it does not give off as carbon dioxide, within a short time at any rate, more than a small percentage of the oxygen absorbed from the air in the bottle. Air bottled with Illinois (Cardiff

mine) coal for two weeks contained, at the end of that time, only 1.05 per cent of oxygen and 1.59 per cent of carbon dioxide, together with 0.62 per cent of methane and 96.74 per cent of nitrogen. Thus only a small proportion of the oxygen which goes into coal comes out again (at least within the time covered by the experiment) as carbon dioxide. The formation of water by the oxidation of a part of the hydrogen in the coal is a natural explanation for the apparent disappearance of some of this oxygen. It may also be that some of the organic compounds have been only partly saturated and hence the oxygen absorbed is not given off at once as carbon dioxide, but comes off later when the oxidation has progressed further.

These experiments seem to indicate that the oxygen absorbed by coal largely enters into chemical combination. At first when coal is exposed to the air, oxygen is absorbed and condensed on the surface, or within the minute pores, in a manner analogous to the absorption of gases by charcoal—as free, chemically uncombined oxygen. But coal holds less gas in this state than charcoal does. The oxygen thus held then passes on into chemical union with the substance of the coal, oxidizing pyrite in the presence of moisture, saturating unsaturated hydrocarbons, and directly oxidizing hydrocarbon compounds with the formation of carbon dioxide and water. As the free oxygen enters into chemical combination, more of the gas is absorbed from the air; hence the process may progress steadily. The occluded oxygen, therefore, is only in a state of transition, which leads to chemical union with the coal.

Grouping together the carbon monoxide, heavy hydrocarbons, and methane as inflammable gas, and the carbon dioxide and sulphur dioxide as noninflammable gas, the combined figures are as follows:

Gas.	Old Dust.	Dust Exposed 2 Months.	Freshly Prepared Dust.
Inflammable gases and vapors	0.65	1.05	3.22
Noninflammable gases.....	1.03	.79	.36

Thus the old dust yielded nearly three times as much noncombustible gas as the fresh variety, but only one-fifth as much combustible gas. The dust exposed for two months in the laboratory took an intermediate place, showing that the escape of the methane and the oxidation of the dust have proceeded in the same manner as in the mine (except, perhaps, the weathering of the pyrites), but that the process had not advanced so far in this length of time. It seems probable that with a longer exposure to the air it would reach the same condition as the old mine dust.

These changes undergone by the dust during its exposure to the air must have considerable effect on its explosive properties. The loss of much of the free methane and some of the other hydrocarbon gases and vapors, coupled with a partial oxidation of the combustible material and an increase in the volume of noncombustible gases, must, other things being equal, reduce the explosive potentialities of the dust.

Conclusion—Fresh Dust More Dangerous.

Because of these considerations, the conclusion seems natural that, unless the action of the air and the general weathering processes introduce some other factors here overlooked, the newly made coal dust at the working faces of the mine should, on a chemical basis alone, other things being equal, possess greater explosive potentialities than the old dust along the main haulage-ways. One of the uncertain operative factors is the occluded oxygen, which may be supposed to facilitate an explosion of dust. But if the conclusion favored by the comparative tests made on these samples of dust is valid, the quantity of oxygen within the

coal dust in the free state is not sufficient to play a very important part in an explosion. Moreover, the sample of freshly prepared dust gave off somewhat more oxygen when the tube in which it was placed was exhausted by the vacuum pump than either of the older samples. If the occlusion of oxygen from the air takes place with such rapidity, the new dust at the working faces must be essentially as predisposed to explosion, so far as occluded oxygen is concerned, as the oldest dust near the pit mouth. Hence it would seem that occluded oxygen is not a very important factor in this stage of the problem.

The physical state of the dust, however, is undoubtedly a factor of the greatest importance. Dryness and fineness of division of the dust must favor its ready inflammability, and in proportion as the dust in certain parts of a mine is drier and finer than in other sections, other things being equal, the danger of ignition from a blown-out shot or other cause must be increased. A study of the relative explosiveness of coal dusts according to their physical characteristics does not, however, constitute a part of this investigation.

Chemically the difference between fresh and old weathered dust, particularly in those respects which most vitally influence their relative explosive potentialities, as has been indicated by comparative experiments, is great. The dust which has long been exposed to the air has, compared with the freshly made dust, lost a very considerable proportion of its free methane and other readily escapable combustible hydrocarbons; has suffered the partial oxidation of a portion of its hydrocarbons, and has stored up an increasing volume of the noninflammable gases, which are the products of combustion. It is probably safe to assume that the finer the dust the more rapid and complete has been this process. Therefore, unless other factors are involved which have been overlooked or whose importance has been underestimated, it would seem that, on the basis of its chemical properties, the fresh dust is likely to prove more inflammable and more predisposed to start and propagate a dust explosion, whatever the immediate precipitating cause may be, than the old dust which has long been exposed to the weathering action of the air.

PEAT CAN BE MADE INTO PAPER.

The peat wood patented by Heibing in Germany is claimed to be a great improvement over previous mixtures of peat and gypsum. The wet peat is washed, and is then mixed with water-slaked lime and an albuminous compound—and sometimes with a clayey earth containing sulphur—and the mixture is forced into molds under a pressure of about 50 pounds per square inch. After short compression, the material is taken out and dried in open air. These artificial boards are claimed to be as hard and strong as the best natural wood, they are not hygroscopic, are fungus-proof, and are slow-burning. They can be worked, polished and painted like natural wood. The peat wood is recommended as adapted for a great variety of purposes, such as flooring, doors, fireproof stairs, ceilings, cabinet work, side-walks, roof coverings, street and factory pavements, decorations, furniture, ship-building, street cars and railroad ties.

REISS COMPANY'S LARGE RECEIPTS.

The C. Reiss Coal company has started to bring large quantities of coal into their Manitowoc docks, the big steel steamer Pollock arriving one night with 8,000 tons, the Brazil the following morning, while two days later, the big steamer Mitchell arrived with 8,000 tons. Several other boats are loading at the lower lake ports with coal for Manitowoc. The Reiss' will have brought enough boats to keep both the new upper docks and the lake front docks busy unloading for the winter demand.

PENNSYLVANIA COAL PRODUCTION IN 1908

The total production of coal in Pennsylvania in 1908, as reported by the United States Geological Survey, was 200,448,281 short tons, having a spot value of \$276,995,152. This included 74,347,102 long tons (equivalent to 83,268,754 short tons) of anthracite, with a spot value of \$158,178,849, and 117,179,527 short tons of bituminous, with a spot value of \$118,816,303.

The production of both anthracite and bituminous coal in Pennsylvania in 1908 was less than in 1907, but owing to the fact that anthracite no longer enters to any great extent into manufacturing industries, it was less seriously affected by the financial depression than bituminous coal. The aggregate production of both kinds in 1908 showed a decrease of 35,299,208 short tons, or 14.97 per cent, in quantity and of \$42,252,930, or 13.24 per cent, in value from that of 1907. Of the total decrease, 2,085,319 long tons (2,336,558 short tons), or 2.73 per cent, in quantity, and \$5,405,207, or 3.3 per cent in value, were in the production of anthracite. Notwithstanding the decrease the output of anthracite in 1908 was, with the exception of 1907, the largest ever obtained, and exceeded that of 1906 by 10,702,092 long tons in quantity and \$26,261,155 in value. The decrease in the production of bituminous coal in Pennsylvania from 1907 to 1908 was 32,063,650 short tons, or 21.95 per cent, in quantity, and \$36,847,723, or 23.67 per cent, in value.

The number of men employed in the coal mines of Pennsylvania in 1908 showed an increase of 9,606 over 1907, the number reported in 1908 being 340,135. Of this number 174,174 were in the anthracite mines, against 167,234 in 1907, and the bituminous-mine workers increased from 163,205 to 165,961. The average number of days worked in the anthracite mines decreased from 220 in 1907 to 200 in 1908, and in the bituminous mines from 255 to 201. The average annual production per man in the anthracite mines in 1908 was 427 long tons, or 478 short tons, against 457 long tons (512 short tons) in 1907; in the bituminous mines it was 706 short tons in 1908, against 919.5 tons in 1907. The daily average per man in 1908 was 2.13 long tons (2.39 short tons) of anthracite and 3.51 short tons of bituminous coal.

Decrease in Use of Anthracite.

From 1876 to 1880 the average production of bituminous coal was 1.41 times that of anthracite, but from 1901 to 1905 the production of bituminous coal was 4.08 times that of hard coal. The reason for this comparatively large gain in the production of bituminous coal lies in the fact that anthracite has been for a number of years becoming more and more a luxury, owing to the comparatively restricted area in which it is produced and the increased cost of production as deeper and thinner beds have to be worked. It is now almost entirely restricted to domestic consumption in the Eastern states, but even for domestic purposes coke and gas, the products of bituminous coal, are competing more and more with anthracite in the larger cities and towns. Large amounts of the smaller sizes of anthracite which were formerly wasted are now used for heating and running elevators in office buildings, hotels, and apartment houses.

Anthracite mining began in Pennsylvania in 1814, when 20 long tons was produced for local consumption. The year 1820 is, however, usually considered to mark the beginning of the anthracite industry, as in that year 365 long tons was shipped from the anthracite region. The first

records of bituminous coal production in Pennsylvania are for the year 1840, when 464,826 short tons was mined. From 1814 to the close of 1908 the total production of both anthracite and bituminous has amounted to about 4,000,000,000 short tons, the production of anthracite being slightly more than half. As, however, the production of bituminous coal in 1908 exceeded that of anthracite by approximately 34,000,000 tons, and in 1907 by nearly 65,000,000 tons, it is probable that by the close of 1909 the total production of bituminous coal will have equaled that of anthracite.

Conditions in Bituminous Mines.

In the bituminous coal mines the number of mining machines employed and the percentage of machine-mined coal to the total production increased in 1908, there being 5,103 undercutting machines in use, against 4,940 in 1907, and the percentage of machine-mined coal to the total increasing from 40.48 to 44.76.

Most of the bituminous mines of Pennsylvania are operated on the eight-hour basis. Out of a total of 165,961 men employed in 1908, 99,406, distributed among 764 mines, worked eight hours; 24,828, employed in 241 different mines, worked nine hours; and 38,125, employed in 197 mines, worked ten hours.

Except for a suspension of operations which lasted practically throughout the month of April, pending an adjustment of the wage scale, there were no strikes or lockouts of sufficient importance to affect the trade as a whole.

The quantity of bituminous coal washed in Pennsylvania during 1908 was 3,561,222 short tons, yielding 3,254,661 tons of cleaned coal and 306,561 tons of refuse.

James E. Roderick, chief of the department of mines of Pennsylvania, reports that 1,250 men were killed and 2,189 injured in the coal mines of Pennsylvania in 1908, as against 1,514 men killed and 2,576 injured in 1907. Of the 1908 fatalities, 678 occurred in the anthracite mines and 572 in the bituminous mines. Of the non-fatal accidents, 1,178 occurred in the anthracite mines and 1,019 in the bituminous, the anthracite mines 57 deaths, or a little less than 9 per cent of the fatalities, were due to gas explosions. In the bituminous mines 162 persons, or 28 per cent of the total, were killed by gas or dust explosions.

Pennsylvania's Rank as Coal Producer.

In 1880 Pennsylvania produced 66 per cent of the entire coal output of the United States, and during the last twenty-five years she has produced about 53 per cent of the total. Since 1902, however, the proportion has been less than half and it is doubtful if it will again exceed 50 per cent.

In the production of bituminous coal alone Pennsylvania far outranks the other coal-producing states, the output in 1908 having been nearly two and one-half times that of Illinois, which ranks second, and having exceeded the combined production of Illinois, West Virginia, and Ohio.

Pennsylvania alone produces more coal than any single foreign country except Great Britain. Pennsylvania's production of coal exceeds, in fact, the combined production of all foreign countries outside of Great Britain, Germany, and Austria-Hungary.

M. R. Campbell, of the United States Geological Survey, places the amount of coal originally in the anthracite fields of Pennsylvania at 21,000,000,000 short tons and in the bituminous fields at 112,574,000,000 short tons. The percentage of waste in anthracite mining has been materially reduced by modern methods, but it is probable that

the exhaustion to the close of 1908 has actually doubled the production, amounting to, say, 4,030,000,000 short tons. This would leave still in the ground approximately 16,970,000,000 tons, which would be capable of producing, at the rate of 1 ton of coal lost for each ton mined, 8,425,000,000 tons, or approximately 102 times the anthracite produced in 1908.

If for the bituminous production 1 ton of coal is estimated as lost for every 2 tons mined, the exhaustion to the close of 1908 has been 2,945,000,000 tons, which would leave still in the ground more than 109,000,000,000 short tons, about 930 times the production of 1908.

IMPORTANT TESTS MADE WITH COAL MINE DUST

Two important tests of coal mine dust were made at the United States testing laboratory at Arsenal park last week. One was dust taken from the Wehrum mine in Indiana county, Pa., where, on June 23, by an explosion of mine dust and gas, 17 miners were killed outright and 16 others injured, four of the latter since dying; the other was a test of anthracite coal dust from the mines of the Lehigh Coal Company in the Lehigh valley.

The test of the coal dust at the Wehrum mine of the Lackawanna Coal and Coke Company was made in the presence of the officials of that company and four state mine inspectors. Those of the company officials present were Chief Engineer James, Assistant Engineer Hulett and Superintendent Johnston, the latter having lost his son in the accident at the mine. The state mine inspectors present were Joseph Williams, Alexander Montieth, Joseph Knapper and T. S. Lowther.

The results of these tests showed that coal dust from the Wehrum mine placed in the exploding gallery and gelatine dynamite and black powder being fired into it from a cannon, caused a violent explosion, even when there was a total absence of mine gas.

The most interesting features of the tests, however, remained to be shown to the officials and representatives of the Lehigh Coal Company, when anthracite coal dust was handled. The hard coal dust was placed in the gallery and to it was added 4 per cent mine gas of the character found in the anthracite mines. When fired into with a flameless powder, there was no explosion whatever. The next test was made with black powder and instantly the dust ignited and the flame extended for fully two-thirds of the length of the gallery, the most extensive "inflammation" that the experts at the testing station had as yet witnessed.

In discussing this matter later, the government officials at the testing station said that the tests thus far with anthracite coal dust have not shown any similarity in results. In other words, the anthracite mine dust seems to differ in explosive qualities in the different mines and under varying conditions. In the past no such effect as that demonstrated on that occasion had been secured. At no time is the anthracite dust so explosive as the bituminous dust, neither does the effect of the explosion in the anthracite mine spread so far as in the case of the bituminous mine and is, consequently, less dangerous to life and property.

After the testing of the dust alone and with gas and with flameless and flaming powder and other explosives, the experts gave an exhibition of safety lamps, showing the various forms of lamps under test. They also operated the safety devices for rescue work. The visitors were kept busy taking in the different features of the mine

tests until early in the afternoon, when they started for their homes at Wehrum.

The visitors were shown over the testing station. There is much under way there that is new, including the construction of the great steel beam testing machine, which is to be the largest in the world. It is expected that this machine will be ready for service in the fall, and for the first time tests of the strength of huge steel beams will be made direct, instead of by computation from smaller ones.

Owing to the curtailment of the appropriation by Congress for pursuing studies all along the line this year, the station has had to give up its fuel tests and is devoting most of the time to mine explosive study and the testing of materials which have an important bearing on the vast construction work of the government.

WOMAN WANTS MORE ROYALTY.

Equity proceedings have been started at Uniontown, Pa., by the Naomi Coal Company against Mrs. Elizabeth Moore for the purpose of restraining her from interfering with the mining of coal leased by the defendant to the plaintiff company. The case has been in court for months and grew out of a claim of careless mining and unnecessary waste of coal in a plat leased to the Naomi Coal Company. Mrs. Moore is attempting to prove that only 50 to 60 per cent of the coal is being mined, where she avers it is possible to get from 90 to 95 per cent. She receives a royalty on the coal mined and claims the failure of the plaintiff company to get this amount of coal is a failure to fulfill the requirements of the lease. Only a short time ago she filed an amendment to her original answer in which she claims the company left 3,000,000 bushels of coal in the mine that should have been taken out and for this alleged waste she claims additional damages to the amount of \$75,000. F. R. Wright and H. B. Moore, mining engineer and draftsman for the company, testified that the coal was being mined along safe lines and that no coal was being left that could be mined in safety.

PITTSBURG COAL REPORT GOOD.

The report of the Pittsburg Coal company for the first six months of 1909 shows an increase in tonnage and also an increase in earnings over the first six months of 1907. In the Pittsburg district the company in the half year mined 5,272,790 tons of coal, an increase of 238,880 tons over the first six months of last year, but in the Hocking valley mines but 316,426 tons of coal were mined, a decrease of 167,164 tons. The financial operations of the company for the six months show a net loss from operation of \$265,996, but of this about \$190,000 is accounted for by the surrender of the leases of the Pittsburg Terminal Railroad and Coal company, so that the actual loss of the coal company for the half year is about \$76,000, or a decrease in the deficit for the six months of about \$127,000.

FORTY INJURED IN MINE PLOT.

As the result of what is supposed to be a death plot forty miners were overcome by gases in the Central Coal and Coke Company's mine No. 31, at Pittsburg, Kan. Three are probably fatally injured. After an inspection of the shaft where the accident occurred, the state inspector intimated that some one had deliberately checked the ventilation for revenge.

Real estate agents, said to represent the New York Central interests, have secured options on a strip of property south of Indiana, Pa., which, it is said, will be used in giving the Pittsburg & Lake Erie an entrance to the coal fields of that section.

AN OUTLINE SKETCH OF MINE VENTILATION

Extracts from a Paper Read Before the Engineers' Society of Western Pennsylvania, Some Time Ago,
by WILLIAM CLIFFORD, of Jeannette, Pa.

In mines (particularly coal mines) explosive, poisonous and irrespirable gases are thrown off, and it is the province of ventilation to remove, or to dilute so as to render harmless, these gases. The principal gases met with in coal mines are CO_2 and CH_4 ; CO and H_2S are found occasionally, the former given off by mine fires and the latter resulting from the imperfect combustion of powder.

Little difficulty seems to have been experienced for want of ventilation in early drift workings, which were mere primitive burrowings along a narrow fringe of outcrop, but towards the end of the Seventeenth century, shafts became common in the Midland counties of England. It was to such shafts that the earliest device for giving rise to a wind, by means of a water fall, was applied. The water was allowed to run over the edge of a large bucket, or to fall on a flat surface, so as to split it up into numerous small streams, or ducts, before it fell down the shaft. This created a feeble wind in the direction of the falling water, supplying the vital air for the breathing of men and animals employed below.

The next step was the fire pan, or basket, consisting of an iron crate suspended at one end of a chain, the other end being fastened to the barrel of a windlass at the top of the shaft. This fire basket, being lowered to near the bottom of the shaft, the air above it was heated, the change of density causing it to rise and set up circulation which continued so long as the fire was kept burning. The feeble current thus set up was suitable only for small mines. In sinking shafts a bellows worked by hand and delivering air into a tube, reaching nearly down to the bottom of the shaft, was used.

* * *

Later the fire pan, or basket, gave place to a furnace fixed near the bottom of the shaft, by which a continuous and greatly increased volume of air was obtained. The evolution of the mine furnace is a most interesting subject, its latest form being designed to rarify large volumes of air with great regularity. Many furnaces in deep shafts produced over 100,000 cubic feet of air per minute and some of them much more. That at the Oaks colliery, at the time of the disastrous explosion in December, 1866, moved 157,000 cubic feet of air per minute, while at Hatton colliery, county of Durham, England, 208,000 cubic feet of air per minute were moved by three furnaces placed at the bottom of the shaft 300 yards deep.

The most remarkable example of furnace ventilation still in operation, is at Murton colliery, Durham, England. The shaft is 498 yards deep. The volume of air passed is about 500,000 cubic feet per minute. To rarify this vast volume, three furnaces of huge dimensions are used, and twenty-seven boilers used for generating steam for hauling, pumping and other purposes, throw their heated products of combustion into this furnace shaft, greatly increasing the motive column.

From 1850 to 1860 the mine furnace received its greatest development. In mines where the return air was so highly charged with explosive gas as to render it dangerous to pass the returns over the furnace fire, an arrangement called a "dumb drift" was used. This was an inclined road driven from a point in the rear of the furnace,

and in its best form separated from it by solid strata, entering the shaft at a point sufficiently high above the furnace to prevent ignition of the fire damp from the flame of the furnace. In some pits only part of the air was passed through the dumb drift, and the returns considered safe were passed directly over the furnace fire. The best practice, however, was to feed the furnace with fresh air direct from the bottom of the down cast pit, and pass all returns through the dumb drift.

* * *

The danger was the liability to fire soot in the furnace flue below and cause it to blaze out the shaft. This soot was cleaned out during the stoppage of the mine, from holidays or other causes, and the writer well remembers doing the somewhat disagreeable duty of "sitting a horse" at the mouth of the dumb drift, watching with a safety lamp for fire damp, while the men are sweeping out the soot from the furnace drift below.

With the best furnaces it was found that coal was burnt very wastefully, and as early as 70 years ago, attempts were made to substitute mechanical for thermal ventilation. One pet idea was to use the jet like a crude kind of Koerting blower, placed in the mine shaft with its mouth upward. This idea received the endorsement of many eminent mining men and a Royal Commission of the day, but the result was a most dismal failure.

Displacement blowers like Lemeille and Fabry, and the huge piston machines like Struve and Nixon, which though of Belgian origin received their greatest development in South Wales, continued in use until about forty years ago (indeed the Struve survived much later at Risca, South Wales). But when the chimney and shutter invented by Guibal was placed over a Nasmyth fan at Tursdale, it showed that the centrifugal fan was the mine ventilator of the future. The weakness of construction, however, unfavorable to high speed, compelled mining men to stick doggedly and tenaciously to slow running fans. But both in England and America, outside the hard coal regions, we have abandoned the idea of getting over the ground with a cart horse, and have decided that a race horse is what we need to win.

The development of electrical machinery has had much to do with the new departure in fans, and the writer would venture to predict that the electric mine fan of the future is one that will be direct coupled to the motor.

* * *

When an explosion occurs it has been commonly found that the over-cast is blown down, and consequently the circulation of air cut off from persons within the mine. Where this is the case, after-damp gets in its deadly work on those who have escaped from the heat, or force, of the blast. In explosions of forty years ago, deaths mainly resulted from after-damp, the force of the explosion having been modified by the lack of air to support combustion. Very limited observations during twenty years past, and all my reading, lead me to conclude that the great bulk of deaths in colliery explosions during that period are from burning. We do not now get explosions so often, but when we do get them they are usually detonating explosions.

In conclusion the writer ventures to say:

(a) That the air entering a mine should not have a

greater velocity than 2,000 feet per minute in the down-cast shaft.

(b) The main airways, from the bottom of the shaft to the first split, should have a combined area equal to one-third greater than that of the shaft.

(c) The cross section, at the top and bottom of a fan shaft, should exceed the area of the shaft itself by at least 50 per cent.

(d) Leading curves at the bottom of the shaft are a good thing.

(e) The main splits should be as near the foot of the down-cast pit as possible. Within 100 feet would be good practice.

(f) All air crossings should have cross sections of 25 per cent in excess of that of the road delivering into them, and the grade of approach should be kept as low as consistent with practical economy and the volume of air to be passed. This is also true of an under-cast.

(g) In all coal mines, where the working zone is at a distance from the shaft bottom (or drift mouth) plastered masonry stoppings should be erected in both main intakes and returns, and all air sealed to ventilate old workings should be passed direct into the returns, each panel of gob having its own over-cast.

(h) The initial velocity, at the point of distribution to working places, should be sufficient to allow some scaling without leaving any place in the district dangerously deficient in air.

Where safety lamps are used, the knowledge that the Clanny lamp, bonneted as commonly done in Pennsylvania, is not safe at fifteen feet per second in an explosive atmosphere, should enter into a mine foreman's calculations on splitting.

(i) In working roads and return airways, air should circulate over any cribbing, and when lagging is used, air should invariably be scaled over it.

EXPECTING BOOM IN BRAZIL BLOCK.

Business in the block coal field is keeping pace with the general increase in business in all the coal fields of the country, and although the domestic trade, on which the block coal business now generally depends, has been slower this summer than usual, the operators in this district are preparing for a steady increase in trade from this time on.

The Brazil Block Coal Company is now working its mines on nearly full time, the increase in summer business being due mostly to the demands for threshing in the Northwest. Domestic trade is also picking up considerably. The Miami Coal Company which has large contracts for supplying the public buildings of Chicago is working full time as usual. These mines have been working steadily all summer.

A number of the other companies of less magnitude have made the repairs at their mines and are now slowly beginning to take on full force and work steadily, to fill domestic orders. The demands of school trustees for winter's coal are causing an increase in business.

On the whole the situation looks bright for an unusually busy season. The coal operators have reason to believe that this fall will be the most prosperous season that the mines have experienced for three years.

NEW ROAD MEANS NEW MINES.

With the expected completion of the Virginian Railway to its coal lands in Raleigh County, the Winding Gulf Colliery Company, of Cincinnati, will begin active preparations within the next thirty days for the development of its mines. The property consists of 3,300 acres, situated on Winding Gulf Creek, and is underlain with a vein of high grade New River coal measuring from 5 to 6 feet.

OHIO COAL OPERATORS

CONTINUE THE FIGHT

Ohio coal operators of the No. 8 and Pittsburg districts have resumed their fight before the Ohio State Railway Commission for a reduction in the coal rates to the lakes. F. M. Osborne, of the Y. & O. Coal Company; W. R. Woodford, of the Rail and River Coal Company, until recently vice-president of the Pittsburg Coal Company, and William Daniels, formerly coal and ore agent of the Baltimore & Ohio Railroad, were the chief witnesses.

"We do not propose to take our case before the Interstate Commerce Commission," declared C. E. Maurer, president of the Glens Run Coal Company. "It is not an interstate question. Our complaint is not against the West Virginia and Kentucky rates, but against the Ohio rate, fixed by Ohio railroads. We are not seeking to have the rates from those states increased, but to have the Ohio rate lowered proportionately. We merely ask to be placed upon a competing basis.

"The No. 8 and Pittsburg districts are the pioneers in the lake coal shipping business. When the Fairmount district first began shipping to the lake trade the differential was twenty cents a ton. It has been reduced constantly until now it is approximately twelve cents. The rate to West Virginia points generally is the same. The Ohio rate is eighty-five cents a ton for a distance of 155 miles; the West Virginia rate is ninety-seven cents for an average haul of something near 440 miles. Ohio coal operators pay the Ohio coal carrying roads an average of 5.5 mills a ton per mile for lake shipments. West Virginia operators pay the same roads 2.5 mills a ton per mile. In many instances the roads haul West Virginia and Kentucky coal approximately 300 miles for an additional twelve cents a ton in excess of the Ohio rate.

"A glance at the coal statistics of the three states will show one of the results of this discrimination. Between 1900 and 1907 West Virginia's coal production increased 112 per cent; Kentucky showed an increase of 102 per cent while Ohio showed only 69.30 per cent increase. It has been argued that these states made this increase because of the employment of cheaper non-union labor. This is not the fact. In Indiana during that same period the increase was 116 per cent and in Illinois it was 99.15 per cent, and both states have union labor. The whole secret lay in the cheaper freight rates which enabled the operators of West Virginia and Kentucky to take away the Ohio market by underselling us at our own lake front. The reduction of the differential from twenty to twelve cents a ton tells the whole story.

"Here is the situation in a nutshell: The Ohio operators pay 5.48 mills per ton mile for the extreme haul of 155 miles. Fairmont operators pay 4.05 mills for a haul of 240 miles. Kanawha district operators pay 2.74 mills for a haul of 350 miles. Cabin Creek operators Kanawha district, pay 2.14 mills for a haul of 450 miles. Marrowbone, Ky., operators pay 1.98 mills for a haul of 490 miles.

"It is to be presumed there is a profit for the railroad company in hauling Kentucky coal at the rate of 1.98 mills per ton per mile else they would not haul it at such a rate. If this is so, wherein is there justification for the same roads charging Ohio operators 5.48 mills per ton per mile? We claim the rate is excessive and extortionate and it is wholly upon this we are basing our claim before the State Railway Commission."

Lord Harmsworth, of London, has purchased for \$2,000,000 valuable coal lands 120 miles southwest of Winnipeg.

MINE WORKERS JOURNAL AND GOMPERS' LETTERS

(From United Mine Workers' Journal, August 5, 1909.)

On Sunday, July 18, every newspaper syndicate that could afford a dollar, or thought they were going to be benefited that much, by the publication of the letters written by President Gompers of the A. F. of L., describing the conditions of labor while on his European trip as representative of that organization, published his first effort in the epistolary line.

There is no doubt but that the letters will be good and well worth the money to those newspapers, and to President Gompers, and thereby hangs a tale that, as a matter of justice to ourselves and to our readers, it is necessary that we should relate, and that without passion or prejudice. The International Executive Board at its recent session, as before noted, had an application from a newspaper syndicate, saying "they had made arrangements with President Gompers for the publication of his European epistles," and that they would be supplied to those desiring them, twelve of them, at \$1.00 per epistle.

The International Board took the position, that inasmuch as the U. M. W. of A. had paid all taxes to the A. F. of L. and out of these taxes was being paid Mr. Gompers' trip to Europe, that the national and international unions had a first mortgage on the benefits that were to be derived, if any, from the services of President Gompers and that he should at least have supplied to the official organs of these unions in good standing free gratis any letters or communications he might have to make.

They felt, and rightly, that the proposition came in the nature of a holdup, and we were to be taxed \$12.00 more to help make money for a syndicate and further enhance the value to Mr. Gompers of his trip. The injustice of the proposition should be apparent to the most casual observer.

Two million half-starved, at the present time, workmen cheerfully wished President Gompers godspeed on his visit, and yet before he leaves our shores he has entered into an agreement by which, if we desire to get the benefits of his visit, we are to chip in to the tune of \$1.00 per letter to help make newspaper syndicates and to further increase the financial benefits of the trip to the man we were already favoring so bounteously, while our craftsmen were starving on half a day's work per week and thousands of them idle for months, caused by the closing down of mills and mines and factories.

Now, this is wrong. We might go further and say, that in our judgment it is viciously so. If President Gompers could not afford to make the trip on the conditions made by the executive council of the A. F. of L., he should have stayed at home, or the council should have raised it. This would have been better than going into an agreement and helping to foster and fasten upon us a press that is very often viciously opposed to us, if it is not so at all times.

The letters will not be published in the Journal for this reason. We have paid our taxes. President Gompers would not have been in Europe now if we and the like of us had not done so, and to us, as an official organ, belongs any benefit that may come as a result of that visit without being held up to the tune of \$12.00 by any syndicate, be it either newspaper or otherwise.

Do not blame us; there is a principle underlying our action. That principle we would not sacrifice if it cost our position—a principle of honesty and square dealing with the boys that swing the pick and use the shovel.

If there can be any valid reason given why we should

recede from this position the columns of the Journal will be open to print it.

We make this explanation as a matter of justice to ourselves and to thoroughly acquaint our readers with the reason those letters do not appear in the Journal, so that we may not be accused of being behind the times in getting the news.

THE DEATH OF L. L. MALONE.

The death of Mr. L. L. Malone, general manager of the Consolidation Coal Company's extensive mining operations, at the Johns Hopkins Hospital came as a shock to his many friends, not only in his home town of Fairmont, W. Va., but to those of many other cities. Mr. Malone was probably the best known practical mining engineer in the country. When a mere boy he entered the employ of the Fairmont Coal Company of West Virginia. From a menial position he gradually elevated himself until about three years ago, when the Consolidation Coal Company of this city secured control of the Fairmont Coal Company and numerous other smaller concerns, Mr. Malone was made its general manager. He was the first man to hold that position. From the time he assumed his new duties until his death he worked steadily, giving little thought to anything but the advancement of the working forces and appliances of the company. While he was in a position to enjoy social distinction he banished them from his mind, and with Clarence W. Watson, president of the company, gave his entire time to the mines.

TAKEN OVER BY NEW CORPORATION.

A corporation, chartered under the laws of the state of Delaware, with a capital stock of \$3,500,000, known as Keokee Consolidated Coke Company, has taken over the Imboden Coal and Coke Company, at Imboden, Wise county, and the Keokee Coal and Coke Company at Keokee, Lee county, among the largest coal-mining and coke-making plants in the Virginia field. The Imboden company, besides operating a large acreage which it owns in fee, operates several mines on property adjoining, leased from the Virginia Coal and Iron Company, one of the largest coal land companies in southwest Virginia. The Keokee company, which is one of the most up-to-date companies in the field, operates a large boundary in the Black Mountain field of Lee county, Virginia, and Harlan county, Kentucky, leased from the Interstate Investment Company and others. There are about 200 coke ovens at Big Stone Gap, Va., and a like number will be built very soon.

NEW COMPANY FOR SALT LAKE CITY.

The organization of a new coal company by local capitalists, whose object is to supply the market of Salt Lake City with an excellent quality of bituminous coal, with great heat-giving qualities, and producing much less than the ordinary amount of smoke, has been perfected and the articles of incorporation have been filed under the laws of Wyoming. The company is the Castle Valley Coal Company, with a capitalization of \$5,000,000, and with the capital stock of a par value of \$5 per share. The officers of the company are well known in local business circles, and feel confident that they have a virtually inexhaustible supply of fuel in their property which can be put on the market at the current price.

FRANKLIN COUNTY, ILL., RECORD.

The mine of the Benton Coal Co., Benton, Ill., hoisted 1,990 tons of coal Thursday, a record for Franklin county mines.

NEW TENNESSEE RAILROAD TO DEVELOP COAL LANDS

The Tennessee River Railway Company, just chartered, will build a twelve-mile railroad to develop coal lands in the western part of Marion county, Tenn., which is promised to be finished and in operation by January 1, 1910. The road will start at Kimball, near South Pittsburg, on the Tennessee river, and run up Battle creek to Sweetens cove. At Kimball it will connect with the Sequatchie valley branch of the Nashville, Chattanooga & St. Louis Railroad and the Stevenson extension of the Southern Railway, and also have a landing on the Tennessee river.

It is stated that this is an independent proposition, backed by a \$1,000,000 corporation that owns extensive coal lands in the vicinity of Sweetens cove. Ringling S. Kilpatrick, of New York, it is stated, is the head of this syndicate. Engineers are now in the field, it is stated, making surveys and otherwise preparing for opening coal mines on the property, so that the mines will be ready to ship coal when the road is completed.

The capital stock of the railroad company is \$10,000. The incorporators are I. W. Crabtree, Arthur Crownover, I. P. Byrom, H. A. Walmsley and S. H. Keith, all of Winchester, Messrs. Crabtree and Crownover being attorneys for the promoters.

Carnegie Buying in Tennessee.

Memphis, Tenn., is circulating a story that Charles D. M. Green, Thos. B. Caldwell and other local capitalists have sold valuable coal lands in East Tennessee to the Carnegie Trust Company, represented in that state by Benton McMillin, for two terms governor and for twenty years a representative in Congress. Governor McMillin and W. S. Morgan, secretary of state during the two terms that Mr. McMillin was chief executive, are both now of Nashville. Governor McMillin and Mr. Morgan admitted a deal was on, but referred to two others at interest, both of whom sidestepped the question and declared they were only meeting the former high state officers in a social way.

COAL MINED IN KANSAS.

The state of Kansas produced 5,588,000 tons of coal during the fiscal year ending June 30, according to the annual report filed by Frank Gilday, state mine inspector. With the exception of two years this is the largest output the state mines have ever made in one year. This output was exceeded in 1905 and 1907. In 1905 the output was 6,347,671 and in 1907 it was 6,591,000 tons.

In the report filed yesterday Mr. Gilday says:

During the year there were employed in and around the coal mines of Kansas 11,334 men, of whom 9,104 were miners, who produced 5,588,016.29 short tons of coal. They worked an average of 179 days. This shows a decrease of 1,002,996.95 tons of coal and 523 employees from the previous year. This decrease was due to the fact of there having been a suspension in all the coal mines of Kansas from April 1 to June 6, this year.

There were thirty-one fatal and seventy-two non-fatal accidents in and around the coal mines of Kansas, or one fatal accident for every 180,258 tons of coal produced, and for every 336 employees. For every 77,611 tons of coal produced and for every 157 employees there was one non-fatal accident.

The miners earned \$4,913,226.74, and the expenses were \$1,010,335.37, leaving a net earning of \$3,902,891.91, of which \$668,657.87 was earned by the underground day men

and \$370,475.34 by the top men, making a total of \$5,952,359.95 for all the employees in and around the mines. The miners made a yearly average of \$559.02 and an average expense of \$114.95. They averaged \$2.48 per day for the days they worked, and \$1.43 for 310 working days of the year. In Crawford and Cherokee counties, 366,798 kegs of powder were used, or one keg for every 13.81 tons of coal produced.

IOWA'S MINERAL PRODUCTION.

The output of mineral production in Iowa during 1908 is summarized as follows:

Coal	\$11,772,228
Clay	4,078,627
Stone, including lime	509,775
Gypsum	564,688
Lead and zinc	26,779
Sand-lime brick	42,881
Mineral water and paints	58,900
Sand and gravel and cement	976,549

Total

Polk county for the first time in the history of Iowa leads in the amount of mineral production for the year 1908, according to figures received this morning by the Iowa geological survey. The output of this county last year was \$3,440,000, with coal the leading product.

The report for the entire state shows that the average price of a ton of coal was higher last year than for ten years. Polk county takes the lead again in the coal production, with a showing of 1,618,895 tons, valued at \$2,816,082.

TRYING TO TAX UNMINED COAL.

County Attorney A. M. Beasley, Linton, Ind., is preparing an appeal brief to the appellate court in the case of Greene County against the Lattas Creek Coal Company. The questions involved are important to all coal companies in the state, as it will determine whether or not unmined coal is taxable. A levy of \$301.02 was made on the Lattas Creek Company's unmined coal in Wright township and the company refused to pay. The case was taken to the circuit court, and Orion B. Harris, sitting as special judge, decided that coal in the earth was not taxable property. The county is not satisfied and Attorney Beasley will file a lengthy brief within the next few days in the appellate court, whose decision will be looked forward to with great interest as it involves many thousands of dollars' worth of property in the state.

CHEAP GAS FOR BOONVILLE, IND.

The Boonville, Ind., City Council has granted a franchise to the Southern Indiana Oil and Coal Company. The price of the gas, as stipulated in the franchise, will be 25 cents per thousand, cubic feet. Work will begin within four months to lay the pipes. The gas will be piped from the field at Gentryville, Ind. The company intends to supply Boonville, Rockport, and perhaps will pipe it to Evansville.

STRUCK COAL AT HERRICK, ILL.

Drillers on the Bolt land 1½ miles northwest of Herrick, struck a seven-foot vein of coal at a depth of 765 feet. Experts claim the coal is as good as any in the state. A thick limestone roof covers the coal. The above named men with Dr. W. H. Gelsthorpe, have about 15,000 acres of oil and gas leases around Herrick.

The art of making glass was brought to England in 674: first made into bottles in England, 1557.

JOHN H. WINDER AS A COAL OPERATOR

The president of the Clinchfield Coal Corporation, John H. Winder, is one of the most eminent coal operators of the country. Mr. Winder is a Southern man and his early years of endeavor were spent in the Carolinas. He was born at Raleigh, and received his education at the State University and other Southern institutions of learning.

The Winder family has been prominent in the history of the Southern States and one or more of the name has fought with distinction and bravery in every cause for the arbitrament of arms from the struggle of the colonies against England, through the Mexican campaigns and the war between the States. Their homes contain many rare and cherished mementoes and trophies of these memorable battlefields. Because of inherited gifts, the examples set by the men of his family and personal instincts Mr. Winder is and has been from the days of his youth a worker, an organizer and an executive of surpassing capacity and marked ability. His earliest business venture, undertaken when he was a very young man, consisted in the operation of large rock quarries and crushing plants near Union, S. C., and the supplying of most of the stone ballast used in the building of the railways that were then radiating in every direction through the Carolinas. It was a time of rapid traffic development and speedy rail construction work. Mr. Winder wrote his name in the pages of the railway world by participating in the building of what are now component parts of the Seaboard Air Line system. Subsequently he was made general manager of the Seaboard and his positive genius for organization welded the separate railroads into a compact, unified and vastly effective trunk line. The older employes of the Seaboard who were associated with Mr. Winder in the important task of converting independent lines into one great common carrier, speak with the utmost enthusiasm of the results accomplished through Mr. Winder's leadership and broad, comprehensive policy.

When the Seaboard Air Line was re-organized in the early nineties Mr. Winder went to New York and shortly afterwards was sent as a representative of New York interests to the Hocking Valley district of Ohio to learn the coal mining business at first hand. It was characteristic of the man that he should start in as superintendent of a mine and should familiarize himself with every detail of mining from the location of the seams to the final preparation of the coal and its passing from tippie to the waiting cars and the distant consumer.

As illustrative of Mr. Winder's strong personality the older miners of the Hocking Valley field tell with relish and respect Mr. Winder's disposal of a mine committee that ruled the operations of the valley with a rod of iron. Shortly after the advent of the new superintendent the mine committee, coming direct from the scene of their grimy labors underground, unannounced and without ceremony, visited Mr. Winder's office to complain of real or fancied grievances. The half dozen or more of sooty men marched into the little office and after rough, surly greeting to the superintendent, disposed themselves, each man according to his comfort. Some had their feet on the table, and not a man removed his hat.

Mr. Winder is a man of unlimited patience, of unflinching courtesy and dignity. In addition he has a splendid physique with great square shoulders, deep chest and mighty arms. He took in the situation at a glance, saw what was needed and that prompt, decisive measures were necessary.

In crisp tones, each word vibrating like steel, he taught that committee a quick lesson in business etiquette.

While the miners gasped at his temerity in thus addressing the most powerful organization in the whole district, Mr. Winder said: "When I enter a gentleman's office it is my custom to act the part of a gentleman and in return I expect to be treated as such. The same rule applies to my callers. Now, you, and you, take your feet off that desk and all of you remove your hats and we'll come to order. In the future do not forget these office rules."

The conference then began with a mine committee surprised and chastened and the word soon went through all the Hocking Valley district that a new man had arrived on the scene; that he could not be bulldozed nor intimidated and had an appreciation of his own worth and dignity and a just idea of what was due his men. Trouble, which was brewing in Mr. Winder's mine, came to an abrupt end and future mine committees called upon him to discuss real grievances and later, when they came to know him better, for his counsel, for they recognized in the new superintendent and later president, one whose equitable disposition caused him always to "tote fair" with the other fellow.

By successive steps Mr. Winder rose to be president and chief executive of three mammoth coal mining companies which, during his administration, were merged into one giant operating company that owns miles of railroad, has its own extensive docks along the Great Lakes and keeps in constant commission chartered vessels on these waterways. The production of this company when Mr. Winder left it was 11,000,000 tons of bituminous coal a year and the fifty-five odd mines from which this splendid tonnage was derived, were scattered from the Hocking Valley district of Ohio through the mountains of West Virginia. It was the second largest corporation in the United States.

Yet Mr. Winder left it to develop the Clinchfield Coal Corporation with its 300,000 acres of richly mineralized coal lands located in southwestern Virginia. With the eye of the pioneer he saw the South of tomorrow, teeming with industries, the great pathway to the Panama canal, the last section of the United States to be exploited and developed by capital. And because of this wonderful sagacity and foresight he left the big Ohio and West Virginia corporation to undertake the task of producing the coal from the vast acreage owned by the Clinchfield Coal Corporation and to find a new and available market for his product.

CLUB HOUSES FOR RAILWAY MEN.

For six new clubhouses, to be used exclusively by its employes, the Interborough company of New York has appropriated \$50,000, and August Belmont added to the sum his check for \$10,000. The board of directors of the company met in the afternoon and by a unanimous vote authorized immediate construction of the buildings.

The houses will cost about \$8,000 each. Terminals of the various lines of the company were selected as places most accessible to the largest number of employes. At the close of the directors' meeting this statement was issued:

"Plans have been perfected for six clubhouses, which will be 65 deep by 36 feet wide. They will contain shower baths, kitchens, smoking and reading rooms.

"The amount donated by Mr. Belmont will be used in supplying books, magazines and newspapers to the various clubs."

FARMERS BITTERLY OPPOSING NEW COAL HAULING ROAD

The farmers along the proposed right-of-way for the branch of the Chicago and Northwestern road, which is to be built from Petersburg to Girard, Ill., are watching with much interest the case of Nicholas Dreelen, the Curran farmer who evicted the surveyors for the proposed road from his land. Reports from the west part of the county indicate that most of the farmers along the route of the new road would like to take some such strenuous measures as this to prevent the road from going through their land and the chances are that a host of condemnation suits will be found necessary to get all of the right-of-way.

The farmers give as their reasons for opposing the building of the road, that that is will cut their farms in two and damage their land and do them absolutely no good, because the road is to be used exclusively for coal hauling. They say that it is not like a railroad or an interurban which might be expected to benefit them to a certain extent by furnishing them with a means of shipping their products more easily. The new road, they point out, will benefit no one but the coal mines and the owners of the road, so far as they are able to find out.

It is said to be the intention of the company to build a double track line through the western part of the county connecting Petersburg and Girard and touching the towns along the route which have large coal mines. The road will be used by the Northwestern as a feeder for its main.

Dreelen has been arrested on a peace warrant because he forced the surveying party to stay out of his corn fields. When they started to survey through his land for the proposed right-of-way, he told them that they would first have to put up the money for his ruined crops. When they refused to do this he made them get out and warrants have been issued on both sides. A large number of farmers over whose land the survey have been made are said to have declared that they will never sell land for a right-of-way until forced by the courts to do so. This will make the right-of-way rather costly for the new coal road.

STEEL CORPORATION STILL BUYING.

Realizing that it is cheaper for them to own their own coal mines, for the past year the steel corporation has been quietly buying coal land in Indiana for the supply of the immense plant at Gary, and about three months ago they took options on large holdings in Vermillion county, Ind., and near Danville, Ill., which is of undeveloped land held by a company of which R. R. Hammond, formerly head of the Dering Company, is president, and of which Hugh Shirkie, of this city, is a member. Recently this option lapsed and it was immediately renewed for the space of thirty days. From this action on the part of the steel corporation it is evident that they intend to purchase this territory. They now own immense holdings in the western part of the state and also in Sullivan county. Their plan is to develop these properties and secure enough coal for the uninterrupted working of their plant at Gary and for the plant of the Illinois Steel Company at Joliet, which is a subsidiary concern.

THE WASTE OF OHIO COAL.

A recent article in the State Journal of Columbus, Ohio, on the waste of coal in the Ohio fields caused much comment in coal circles yesterday and the majority of coal men declared that the statement that 40 per cent of the available coal was left in the ground was an under rather than

an over statement. They declare that under present conditions they can only mine the coal at a profit which is easily at hand, and that which is difficult to get at is left in the ground. One of the leading operators of Ohio said: "Under the competitive conditions now existing, we would be compelled to go out of business if we were to attempt to clean up our coal. It is an infamous process to do as we are doing with the coal deposits of the state, but we have no alternative. West Virginia, with her cheaply mined coal and nonunion labor can undersell us in any of our markets and we must waste coal to meet this competition. This year, to my certain knowledge, coal from Ohio mines is being sold at a lower rate than it cost to mine it last year. What the mining cost will be this year we cannot tell until the end of the year, but there has been little money in the business for any Ohio operator this year."

COLORADO WILL FIGHT UNCLE SAM.

Colorado has more than 1,000,000 acres of land from which not one cent of revenue is being received. Included in this large acreage there are about 250,000 acres of probable coal lands. And the state will resist any and all attempts that may be made by the federal government to get these lands back. Owing to the grants of land made by the government to railroads, the state was forced to relinquish about 500,000 acres of land to these corporations. The state then had the right of selection on government lands to indemnify herself for the lands given up.

The government has agents in the field investigating the character of the lands selected by the state agents twelve years ago. Under the terms of the contract with the government the state was barred from selecting known mineral-bearing lands. If the government's agents report that the lands contain outcroppings of coal or other mineral, suits will be instituted to reclaim these lands to the government and the state will resist vigorously any such action.

TWIN CITY DEALERS AT PLAY.

The coal men of St. Paul and Minneapolis, wholesalers and retailers, to the number of about 500 from each city, held their annual outing recently with the largest attendance yet enjoyed.

There has been a lively rivalry between the two cities because of an agreement that the city furnishing the smaller number of people shall give a banquet to all the dealers within three months of the picnic. Another interurban wager was a game of baseball in which the St. Paul team was led by Captain Knute Miller and the Minneapolis nine by Captain Joseph Dufour. There were numerous athletic contests.

ROBBED OF HIS PAY ROLL.

Mr. Robert Wicks, of Rush Run, W. Va., bookkeeper for the New River Collieries Company, was held up and robbed near Thurmond, W. Va., by a masked man who stepped from behind a big rock and demanded that Mr. Wicks hand over a package he had, which contained money for the payroll for the Rush Run mine, amounting to \$4,391.16. No clue to the robber.

PENNSYLVANIA'S JUNE SHIPMENTS.

The June shipments of bituminous coal over eight of the leading coal carrying roads of Pennsylvania were 7,911,711 tons, compared favorably with 6,988,004 tons transported during June, 1908. The coke traffic in June over these roads was 1,921,451 tons, showing the largest monthly total for the year and exceeded 75 per cent of the quantity reported for June, 1908.

NEW ENTERPRISES

Hopkins County Coal Co., Nortonville, Ky.; capital \$250,000.

New Haven Coal Mining Co., Owosso, Mich.; capital increased to \$750,000.

The Chicago Lumber & Coal Co., Beaumont, Tex.; increased capital stock from \$25,000 to \$50,000.

Dalton Coal Co., Gary, Mo.; capital, \$10,000. Incorporators: W. A. Dalton and John J. Nyhoff.

Carbon Fuel & Iron Co., Denver, Colo.; capital \$500,000. Incorporators: H. W. Stephens, G. E. Downton, E. V. Duncan.

Northwestern Fuel Co., Portland, Ore.; capital, \$50,000. Incorporators: G. W. Sanborn, F. H. Sanborn and G. C. Fulton.

Anthracite Coal Co. of America, Camden, N. Y.; capital, \$100,000. Incorporators: F. R. Hansell, I. C. Clow, J. A. MacPeak, Camden.

Harvey Coal Co., Harvey, Iowa; capital \$5,000. Philip Bishop, president and treasurer; W. L. Nail, vice-president; C. Anderson, secretary.

Lewiston Mining Co., Lewiston, N. Y.; capital, \$5,000. President, W. H. Hastings, Malden, Mass.; treasurer, S. M. Carter, Auburn, N. Y.

Hopkins County Coal Co., Hopkins, Ky.; capital, \$250,000. Incorporators: George C. Sandifer, B. N. McGraw and S. T. Castleman, of Louisville.

Zimbelman Coal Co., Boone, Iowa; capital \$8,000. Incorporators: Louis, Lafayette and George H. Zimbelman, William Conway and Rovena Patterson.

The Red Feather Mining Co., Quapaw, Okla.; capital, \$5,000. Incorporators: C. R. Armstrong and W. W. Gehhart, of Quapaw, and E. M. Corah, of Chelsea.

Domestic Coal Co., Fairmont, W. Va.; capital \$25,000. Incorporators: H. R. Staggers, J. B. Staggers and A. G. Martin of Fairmont, and Philip Steptoe of Clarksburg.

Harrison-Barbour Coal Co., Fairmont, W. Va.; capital \$500,000. Incorporators: J. A. Clark, S. G. Race, H. F. Smith, J. R. Linn and E. M. Showalter, all of Fairmont, W. Va.

Harrison-Barber Coal Co., Fairmont, W. Va.; capital, \$500,000. Incorporators: J. A. Clark, L. G. Race, H. F. Smith, J. R. Linn and E. M. Showalter, all of Fairmont, W. Va.

Orient Lumber & Coal Co., Clinton, Kan.; capital \$10,000. Directors: H. P. Brown, J. S. Jones, J. B. Broffett, E. A. Tittsworth, W. A. Lennen and H. P. Gross, Jr., all of Clinton.

West Run Coal & Coke Co., Morgantown, W. Va. Incorporators: Charles H. Loucks, E. J. Atherton, W. P. Hurst, W. L. Hassness and Homer C. Deffenbaugh, of Scottdale, Pa.

The Genesee Coal & Mining Co., Bay City, Mich.; capital \$250,000. Officers: H. J. Thompson, president; DeVerre Hall, vice-president; E. V. Ingersoll, secretary and general manager; F. W. Ingersoll, treasurer.

OKLAHOMA COAL MINE DEAL.

The Witteville coal mines at Poteau, Okla., were sold recently to J. M. and H. C. Thompson of Winchester, Ky., and will resume operations immediately, employing three hundred men. These mines have been idle several months. The property represents a two-million-dollar investment.

MINERS ADOPT RESOLUTIONS CENSURING THE COURTS

The anthracite miners in convention at Wilkesbarre, Pa., adopted a resolution censuring the courts of Lackawanna and Luzerne counties for failure to appoint new miners' examining boards.

The convention a year ago directed the district officers to present a list of eligibles to the courts of Lackawanna and Luzerne counties, with a request that the members of the mine examining boards be picked from among these. This was intended to try and prevent further fraud in the issuing of miners' certificates.

Court has not yet named the board despite the fact that their terms have expired. This fact was commented upon in the executive board report to the convention and prompted Nicholas Burke, of West Scranton, to introduce a resolution on the subject. The resolution, which follows, was favorably reported and adopted:

Whereas, This convention at its last annual session, held in Scranton, directed its officers to request the courts of Lackawanna and Luzerne counties to appoint new Miners' Examining Boards. And,

Whereas, The enforcement of the miners' certificate law, designed to protect life, limb and property, is wholly dependent upon the integrity, judgment, intelligence, experience and ability of the members of the boards. And,

Whereas, There have been violation of said law, and traffic in fraudulent certificates, and miscarriages of the purposes of the law, and for which reasons it is necessary to make careful selection of the personnel of such boards. And,

Whereas, In compliance with the instructions of the convention, our district officers presented a list of eligibles to the courts, but which the court saw fit to ignore, despite the fact that the law was enacted solely for the protection of the men of the anthracite industry. Be it

Resolved, That this convention express its sincere disapproval of the failure of the courts to recognize the importance of this matter, and also renew our efforts to have new appointments made in accordance with the law governing them.

Mr. Burke also introduced the resolution censuring the recent Republican controlled legislature for its hostile attitude towards labor. The convention adopted this with a shout.

Benjamin McEnaney, of Edwardsville, is the new president of District No. 1. John Dempsey, of Scranton, was re-elected secretary-treasurer, and Adam Ryscavage again becomes vice-president after having filled the office of president since last March, when Hon. T. D. Nicholls retired. Stephen Reap, M. H. Healey, Daniel McCue and Peter O'Donnell are elected board members, and Richard Roberts, Harry Kerins and John Price, auditors.

ORDERS MINE STRIKERS TO WORK.

After an agreement to refer points in dispute to National President T. L. Lewis, President Rollins of the United Mine Workers of Indiana ordered 600 miners to return to work at once. The trouble involved the Summit, Hilltown and Burnett mines. The strike, called one month ago, was due to dispute over handling slate.

We cannot fight for love, as men do;

We should be woo'd, and were not made to woo.

—Shakespeare.

BRITISH COLUMBIA COAL PRODUCTION

From the Annual Report of the British Columbia Bureau of Mines.

Nearly all of the coal mined during the year was produced by three companies—the Crow's Nest Pass Coal Co., in East Kootenay, and the Wellington Colliery Co. and the Western Fuel Co. on Vancouver Island. Several new collieries are soon to become producers. Probably the most important of these new collieries is that of the Hosmer Mines, Ltd., at Hosmer, a few miles north of Fernie, in East Kootenay. The seams being opened up here are supposed to be the same series as those worked by the Crow's Nest Pass Coal Co. The plant is most extensive and modern. The company is an offshoot of the Canadian Pacific Railway.

In the same section of East Kootenay the Corbin colliery, at Corbin, on McGillivray Creek, has just been opened up. The company is associated with powerful railway interests.

In the Coast district, the new colliery of the Nicola Valley Coal & Coke Co. shipped 26,227 tons of coal during 1908. This production was limited by the market that the C. P. R. freight rates would allow it to reach, rather than by the capacity of the mines. The adjoining colliery of the Diamond Vale Colliery Co. produced 3,011 tons of coal. It is still in the development stage.

On Vancouver Island, the South Wellington Coal Mines, Ltd., near Nanaimo, and the Gilfillan Colliery at Wellington, produced small quantities of coal.

The gross output of the coal mines of the Province for the year 1908 was 2,109,387 long tons, and as 12,820 tons were taken from stock, it makes the total quantity of coal disposed of during the year 2,122,207 tons. Of this gross amount, 918,872 tons were sold for consumption in Canada; 567,274 tons were exported to the United States, and 29,883 tons were exported to other countries; making a total of 1,516,029 tons of coal sold. In addition to the sales, 431,538 tons of coal were used in making coke, and 174,640 tons were consumed under colliery boilers.

From the 431,538 tons of coal, 247,399 long tons of coke were produced. Of this amount 768 tons were added to stock. The net coke sales were thus 246,631 tons—209,317 tons sold for consumption in Canada, and 37,319 tons for consumption in the United States.

Coast Collieries.

In 1908 the coast collieries mined 1,226,182 tons of coal, and 13,921 tons were taken from stock, a total of 1,240,103 tons, distributed as follows:

Sold as coal in Canada.....	717,964 tons
Sold as coal in the United States.....	300,445 tons
Sold as coal in other countries.....	29,883 tons
Total sold as coal.....	1,048,292 tons
Used under companies' boilers.....	120,523 tons
Used in making coke.....	71,288 tons
	1,240,103 tons

As compared with 1907, there is a decrease of 31,453 tons, 2.9 per cent, in the sales of the coast collieries. The consumption of coal in that portion of British Columbia served by the coast collieries shows in 1908 an increase of 19,923 tons, equal to 2.85 per cent. The amount sold for export to countries other than the United States shows an increase of 35.6 per cent. The decrease seems, therefore, to be confined to the export sales to the United States,

which in 1908 show a dropping off of 59,221 tons, or about 13.7 per cent, as compared with 1907, while, as compared with 1906, the decrease is still greater, amounting to 132,738 tons. These decreased sales are accounted for by the use of oil fuel in California, and, to a less extent, by the importation of coal from Japan.

The Wellington Colliery Co., the only coke producer, made 12,530 tons of coke, of which only 6,022 tons were sold. Of this amount, British Columbia took 2,904 tons, the United States 3,118 tons, and 6,508 tons were added to stock. These figures show a great falling off in the consumption of coke in the coast section.

East Kootenay Coal Field.

In this field the Crow's Nest Pass Coal Co. produced 876,467 tons of coal, of which 359,703 tons were used in making 234,098 tons of coke. Hosmer Mines produced 2,627 tons of coal and 771 tons of coke; while the Corbin Coal and Coke Co. produced 4,111 tons of coal and no coke. The gross production of the district was 883,205 tons of coal, of which 1,101 tons were still in stock at the end of the year, making the amount of coal distributed 882,109 tons. Of this amount 360,250 tons were used in making 234,869 tons of coke. The distribution of the coal was as follows: Sold in Canada, 200,908 tons; sold in United States, 266,829 tons; total sold as coal, 467,737 tons; used in making coke, 360,250 tons; used under colliery boilers, 54,117 tons; total, 882,104 tons.

The total coke sales were made up of the 234,869 tons of coke produced and 5,740 tons taken from stock; 206,413 tons were sold for consumption in Canada, 34,196 tons for export to the United States. The coke production shows an increase of 28,328 tons, or 13.7 per cent, as compared with the previous year. The total coke sales show an increase of 39,732 tons, or 19.7 per cent; the coke sales in Canada show an increase of 64,426 tons, or 46.4 per cent; but the coke sales to the United States show a decrease of 25,094 tons, or 42.9 per cent.

The Fernie fire and radical changes in the system of mine development at the collieries of the Crow's Nest Pass Co. retarded that company's output temporarily. In future, however, the output will be more regular and the mines safer for the workmen.

ALL OUT AFTER A SLICE.

The New Haven Coal Mining Company, which is trying to construct six miles of track from its mine to connect with the Ann Arbor Railway at Owosso, Mich., is still having its troubles. Recently the company settled an injunction which had been secured by a real estate man who declared that the line would injure his property, and the next day early another dealer secured a like injunction, which was doubtless secured because the other man had secured "damages."

The Northern Coal & Coke Co. has prevailed upon the Interstate Commerce Commission to order the Colorado & Southern Railway and others to establish through routes and joint rates on lignite coal from Louisville, Colo., via Denver, to points reached by the Chicago, Rock Island & Pacific Railway in Kansas, Nebraska, Missouri, Iowa and Oklahoma.

OUR FAITHFUL CANINE FRIEND

The Largest Dog in Berlin.

One evening, while in Berlin, we were taken to a prominent cafe to be introduced to the largest dog in Berlin, a great Saint Bernard, wrote George T. Angell, in "Our Dumb Animals," shortly before his death. As we sat in our chair his head was on about the same level as ours, his mouth was almost as large as a lion's, and he gave us the kindest welcome by lapping our face with his great tongue. While in Paris, we visited one day the great picture galleries at Versailles, and at the close were seated at a small square table at a neighboring cafe, dining with two dogs and a cat, all three splendid animals, each occupying a separate side of the table. We enjoyed that one incident more than all the miles of picture galleries we had spent the whole forenoon examining.

The Dog and His Chum.

A very ordinary-looking farm horse, harnessed to an old wagon, stood by the curb; and on the board that served for a seat lay a small dog of such mixed blood that no guess could be made as to his breed. As a delivery wagon passed on the opposite side of the street, a large red apple fell off. Before it stopped rolling, the dog bounded across the street, picked it up with his teeth, and, with tail wagging, rushed back to the horse, in front of which he stood up on his hind legs, while the apple was taken from his mouth. As the horse munched the apple, he made the peculiar little noise that horses make when petted, and doggie replied with throaty little barks which plainly told what a pleasure it had been to go after that apple. Then he went back to his place on the wagon seat.

With Master to the Last.

In a special dispatch to the *Toronto Globe*, the thrilling story is told of the tragic death of Surgeon Flood and his leading dog, at Fort Churchill, where they were frozen to death in the worst storm that Winnipeg has experienced for twenty-five years:

Dr. Flood was one of a party of three who went out exploring for timber. When they left the weather was fair and everything looked favorable. They had prepared a camp, but found they had dropped their grub box on the way and were without food. Laughingly the fact was noticed by Dr. Flood who thought it not far away and offered to return for it, jocularly treating any offer of assistance.

"He took the dogs back and as he disappeared over the snow the last of him was seen until his dead body was found by a mournful search party three days later.

"While he doubled back over the track a snowstorm, which was destined to bury him, came up and he lost the trail. Over the bleak wilderness, miles away from any chance of succor, unless he could find his way to the camp, he wandered until he dropped from exhaustion. The search party found that he had guided the dogs and when they instinctively turned towards the camp he turned their heads away and went further into the wilds as the faithful leader took the trail in the direction indicated by his driver. That wonderful instinct which has been noticed in horses and dogs, who never seem to lose their sense of direction, guided them, and had he let them go they would have taken him to safety, but he trusted to his intelligence in the blinding snow and perished. Whenever the trail left by

him showed that the dogs were given their heads, they turned towards the camp and made for it, only to be turned away into the very way of destruction.

"When the body was found it was a pitiful sight. Flood lay in the snow and his faithful leader lay alongside of him; also frozen stiff. Faithful to the last, the dog had tried to keep his master's body warm and had perished. The responsibility of a leader of a dog train is felt by that animal, and when Flood dropped in his tracks the other dogs bit themselves free of the harness and each other and sought safety, while the leader lay down beside his master and with him died in the snow."

Bulldog Stops a Runaway Horse.

Menominee, Mich., folks think that "General" is undoubtedly the most famous bulldog in the Northwest, having leaped into fame by stopping a runaway horse on a crowded thoroughfare of that city. It was a wild scene. The horse attached to a light wagon racing wildly down the crowded street and people were scrambling to get out of the way. "General," who was walking with his master, realized that the supreme moment of his life was at hand and grasped it. He jumped in where it was dangerous for even a bull pup as hard as nails and as limber as a whip lash. He darted ahead of the horse and then sprang back straight at its head, checking it somewhat. Again and again he turned this trick, whirling in the air like a four-legged dervish, until he brought the frightened animal to a standstill. His owners were offered a fancy price for the bulldog that has sense and grit enough to stop a runaway horse, but "General" is not for sale.

This Dog Has But One Eye.

Aubrey Ogelsby, of North Alton, Ill., requests all nature fakers in Alton proper to sit up and take notice, declaring he has a freak that is not a fake. It is one of several pups of his Gordon setter, lately arrived. The pup has but one eye, set in the center of its forehead. There is no mark of another eye, and the places where the two eyes should be, in any well-regulated dog, are covered with skull. Ogelsby says the pup is healthy. Despite its handicap, he predicts it will make an exceptionally good hunting dog.

Dog Keeps the Old Custom.

For several years an old man was in the habit of visiting one of the car barns in Chicago at the same hour every day, where he always occupied the same seat while smoking and conversing with the trainmen. He was invariably accompanied by a large, shabby dog, seemingly as old as himself. About a year ago the old man died, and since that time the dog has not failed to visit the barn every day at the usual hour and insists on occupying the same place which he occupied before his master's death.

One day the old man had a quarrel with one of the men over some trivial matter and the dog still holds the grudge in behalf of his dead master, always growling and showing his teeth in a vicious manner whenever this man tries to make up with him. He is also averse to making new friends and always ignores the kind attention of strangers, but is always glad to welcome those who were kind to his old master, never failing to rise and shake hands with one conductor who was a favorite with the old man.

LITTLE ROMANCES OF THE COAL INDUSTRY

How Unexpected Discoveries of the World's Great Fuel Have Brought Vast Wealth to Those Who Never Dreamed What Lay Beneath the Surface—Mexican Laziness Shows Americans the Way—Race With a Mine Fire.

The recent lease of the Browning coal mines at Pocahontas, Va., to a Baltimore man recalls the romantic story of how Colonel James S. Browning came to be possessed of that valuable property. These mines have already netted him and his wife a clear million dollars, to say nothing of the royalty which they are still to receive on every ton of coke manufactured from those mines.

Colonel Browning is a native of Washington County, Va., and is a son of Jesse Browning, still living at the old homestead in Meadowview. "Jim" Browning, as he was known in his young manhood, married Miss Ollie Hoge, a daughter of a wealthy farmer, who owned hundreds of acres of rich land in Tazewell county, and in the fertile section known as Burke's Garden. The venerable father objected to his daughter marrying "Jim" Browning for some cause, but she disregarded his wish and when he made his will he manifested his disapproval of his daughter's course by excluding her from participation in his estate.

It was a sorrow to Mrs. Browning, but she bore it uncomplainingly. A few years after this will had been written it was discovered that a cheap, unsightly piece of mountain land had not been disposed of in the will. By the advice of an attorney and friends, and feeling that it might not be well to entirely ignore his slighted daughter, lest the validity of the will be questioned, as old age crept upon him and his head was growing white, the old gentleman bequeathed her this apparently worthless holding up among the crags and boulders and scrubby pines.

Later the aged father died and in time this land proved to be a treasure of unsurpassed value. It was found to bear one of the most productive coal veins of the Pocahontas region. And now Mrs. Browning, who was to have nothing as the price of her marriage with "Jim" Browning, is worth many times all that is in the possessions of the other members of the family.

Three-Mile Race With a Mine Fire.

Running with all their speed, realizing that a misstep or a stumble would probably be fatal, twenty-five men employed in the Forest Hill mine of the Pittsburgh Coal company at Smithdale, Pa., twenty-two miles east of Pittsburgh, on the first day of May, 1909, outran a huge wall of fire and escaped unscathed through the rear entrance of the mines, three miles from where the fire started. At the mouth of the mine a thousand anxious men and women and children stood about, hoping, as they thought, against hope, for the rear entrance was forgotten, it having but recently been built; this being one of the lessons learned by the company through its experience at the Darr mine, where there was no rear entrance and where 160 men died.

It was about 5 o'clock, quitting time, and preparations were being made by the men for leaving the mine when suddenly the first burst of flame was seen. The fire bosses took charge of matters and a sortie was attempted in the direction of the front entrance. Escape here was cut off and the men for the time being were in despair. Then one man recalled the rear opening and the miners started on their race for life. The three miles seemed like hundreds, minutes like hours, as they dashed along. A streak

of daylight—dim and gray—appeared down the dark tunnel. It was deliverance, safety from a fiery death, and they fell exhausted on the ground outside.

At the mouth of the pit Supt. James C. Henderson, calling for volunteers, assayed to enter the burning mine. The party was beaten back time and time again, but finally it reached the place where the stables and mules had been. There all hope for the men was abandoned. A little later, however, a messenger from the entry back in the hills arrived with the news of the entire party's safety and then a cheer of rejoicing and thankfulness arose. Women and children streamed towards the hills to meet and greet the returning husbands and fathers.

How a Mexican Deposit Became Known.

The rich coal deposits near the Cerro de Xicontepec became known to Americans by the criticism of a Mexican railroad laborer on the women of a neighboring town. He remarked casually that the women of that town were excessively lazy. To illustrate, he said that they were so lazy they would not even go out and chop wood (the men, of course, were too high caste to do such menial labor), but that they would actually go down in the arroyo and pick up a basketful of black rocks which would burn and use them in their culinary operations. The guileless way in which the story was told was somewhat convincing to certain parties who, after making preliminary examinations, departed for the States carrying a valise full of samples. These samples proved to be rich coal, and Pittsburgh capitalists at once got busy.

Sisters Wealthy Through Merger.

From \$40 an acre to \$1,700 an acre in less than forty years is nearly a record jump in the market value of farm land, especially as the high price was paid while the land was still used for agricultural purposes. The property is the Hogg farm, located in the Connellsville coke region, now being so much talked about because of the pending merger of independent coke companies operating there.

Mr. Hogg settled some miles out of Brownsville, Pa., buying a couple of acres for \$40 to \$50 per acre. He was a practical farmer, and prospered so that he was able to add to land holdings until they totaled 700 acres. He worked nearly the entire farm, raised two sons and two daughters on it, and when he died, his wife having died some years previously, he left not only the 700 acres free of debt, but cash and securities amounting to nearly four hundred thousand dollars.

There was no will and the estate went to the four heirs. The two sons, not caring for farm life especially, agreed to take the bulk of their father's cash and securities as their portion, deeding their interest in the farm to the two sisters. The girls married shrewd business men. As coal land in the vicinity of the farm came into greater and greater demand, the two sisters were offered higher and higher prices for their farm, but their husbands advised them to wait. And they waited.

They held on to the farm until a few months ago, when they sold it to J. V. Thompson and others of Uniontown for \$1,700 per acre, or \$1,190,000. That gave them nearly

\$600,000 apiece, against about \$100,000 which each of the brothers got years before as their share of the estate.

The property is not being tilled now. The big house on it has been converted into an office and lodging place for engineers and surveying corps, who are planning to open up the coal that brought a fortune, and are getting ready to put up ovens to convert the coal into Connellsville coke. The property is one of those involved in the pending big merger.

BY WAY OF REST.

A quipster found himself one day
Without a topic for a lay,
Yet fashioned he
No parody
About Maud Muller making hay.

He'd parodied for many years
Maud Muller and her hopes and fears,
And so this time
He wrote a rhyme
About the soldier at Algiers.

—Louisville Courier-Journal.

That's like ourselves. We've written dam
Good parodies on O Khayyam,
And some day when
We've time, why then
We'll grind out one on Mary's lamb.

—Cleveland Leader.

Through many a long and weary year,
We've keyed up Hiawatha's gear,
But next time we
Shall switch our plea
And pull a boost for Paul Revere.

—Nashville Tennessean.

We write no parodies on Miss
Maud Muller or Khayyam, you wis,
When we grow hot
And themes come not
We grab onto a rope like this.

—Houston Post.

Worse things than these we've read and then
To show our foolishness to men,
A simple twist
To foot the list
And dodge the seat of Abou Ben!

—Charleston Gazette.

I wrote one once—to be or not—
I really have forgotten what—
But next time I
With Old King Cole to make a swat.

And if that shouldn't strike it right,
Then curfew shall not ring tonight
Will do once more
Or I'll implore
That Time turn backward in his flight.

Announcement is made that the Coastwise Transportation Company, operating what is known as the Crowley fleet of sailing vessels, will supplant their sailing vessels with steamships. Two 8,000-ton boats, each to cost \$500,000, will be built for the company for their coal trade between Philadelphia and Boston.

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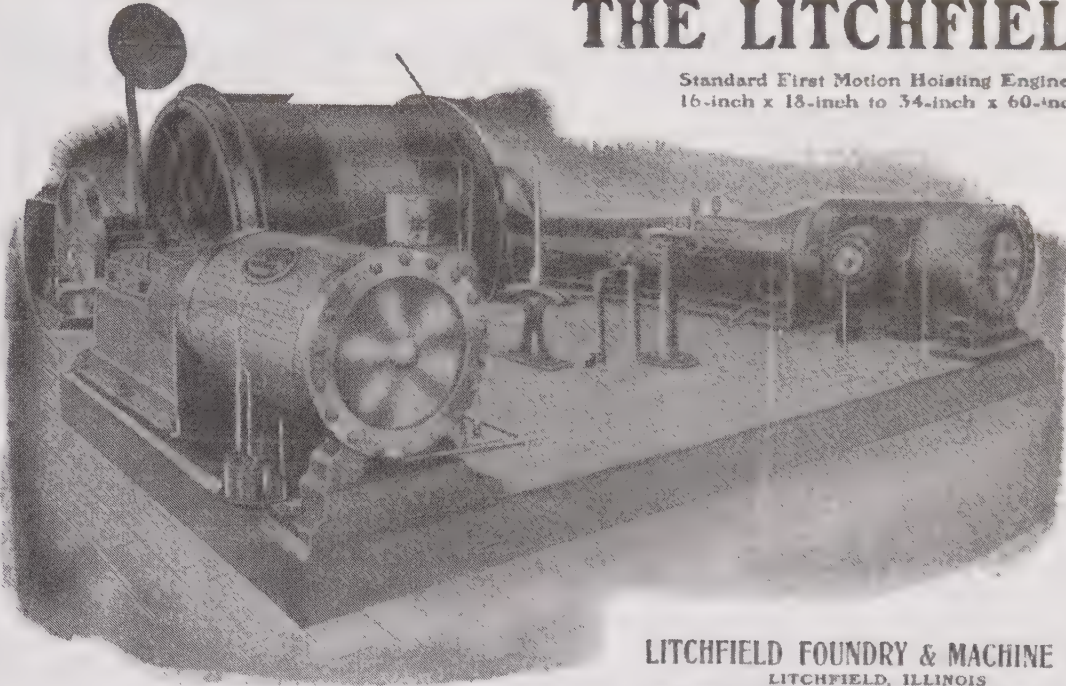
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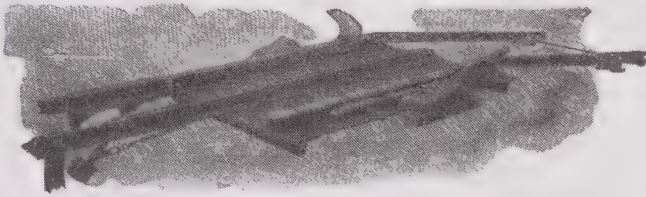
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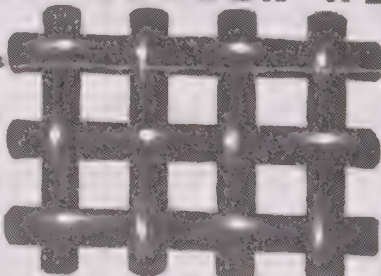
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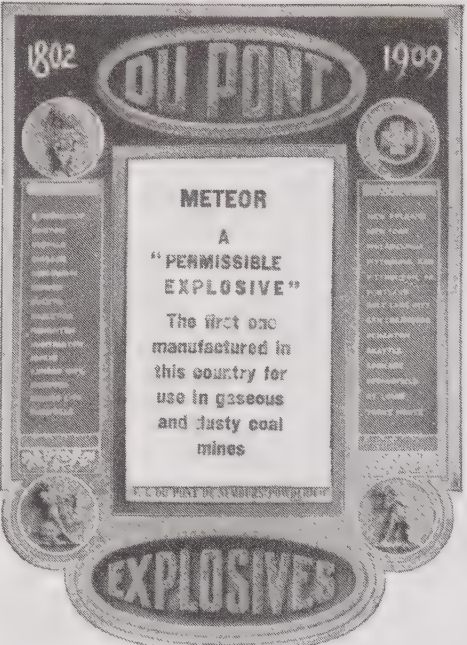
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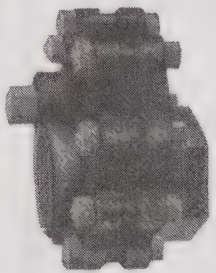
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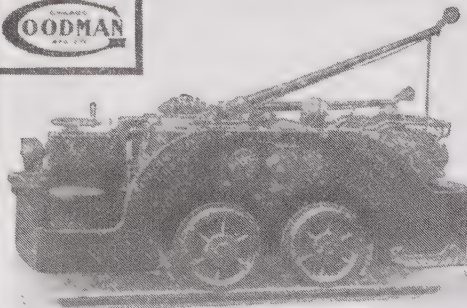
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FUEL

A WEEKLY JOURNAL DEVOTED TO COAL, COKE & KINDRED INDUSTRIES

Vol. XIII. No. 16.

CHICAGO, ILL., AUGUST 17, 1909.

Price \$2 Per Year.

ACQUIRING COAL LAND IN SOUTHERN ILLINOIS

Recent Purchases Indicate a Strong Belief in Promise of Future Wealth—Matters of Interest Gathered From Many Parts of the State—Revival of Activity in Sections and Continued Depression in Others.

The largest coal deal put through this season was consummated early last week when General Superintendent George Spiller of the Southern Illinois Coal Company began to close options on 700 acres of coal rights lying east of here and adjoining the Oak Ridge holdings, writes the editor of the Herrin News. The average price was \$100 an acre, amounting to \$70,000. Only a small tract of surface was purchased. The entire body of land was secured from seven or eight owners who were farmers that had held onto their land until they realized a price at which coal rights have been selling for the last two or three years. The largest owner was Fletch Ferges, who deeded to the mining company one contiguous body of 274 acres.

It is intended to mine all of this coal through the Oak Ridge shaft which is located a few miles east of Herrin on the Illinois Central and is also reached by the Coal Belt railroad. With this and 422 acres, which Oak Ridge is now mining, this will give 1,122 acres, the largest body on which any of the three mines of the mining company is located. Superintendent Spiller says that extensive improvements have been planned at the Oak Ridge shaft. Its present capacity is 1,000 tons a day, but it will be increased to 2,000 tons. Two tracks will be added to the two tracks now at the shaft.

With this additional acquisition, the Southern Illinois Coal Company has 1,604 acres about Herrin. Hemlock, south of the city, stands on 162 acres and the new mine north of the city known as Possum Ridge has 320 acres. This is the largest and most modern mine owned by the company.

The Southern Illinois Coal Company is the result of the reorganization of the Big Muddy River Consolidated Coal Company, which had its general offices in Louisville, Ky., and later in Hopkinsville, Ky. The new company is a strong financial concern, being financed by Boston capitalists. William A. Jepson is president and Hiram J. Potter is treasurer. The general offices are located in the Fisher building in Chicago, and T. J. Hudson, Jr., is in charge of the sales offices there. Sales offices are also located at St. Louis in the Bank of Commerce building, with J. D. Barth in charge, and at New Orleans, in the Maison Blanche building in charge of Orville Virder.

The local office is in the Alexander building in this city, with George Spiller as general superintendent of the properties, George C. Blee superintendent of transportation and W. C. Westermier chief clerk, who constitute a polite and amiable office staff.

With the valuable holdings the Southern Illinois Coal Company has in this field and the sort of men behind it, this

mining company gives promise of taking first rank among the large shipping mines of Illinois.

Aid for the Westville Miners.

The miners of Westville, Ill., and vicinity who have been out of employment for the past several months, receive aid from the state federation of miners and according to the report given out about \$7,000 has been distributed among the various miners' locals within the past few days. Of course this applied only to those who have not had employment sufficient to keep soul and body together and have only been working a few hours out of each week. While the sum was not much per capita it helped out to a great extent and is therefore appreciated. It is understood the deal was a sort of a special one that secured the money and was carried through by Evan Evans, who made a special trip to Springfield for that purpose.

Spring Valley Company's New Shops.

The Spring Valley Coal Company is putting up a new set of shops for the Seatonville shaft, consisting of a carpenter, machine and blacksmith shops, all under one roof. It has corrugated zinc sides and roof and the wooden frame is on cement piers. The old ones will be torn up and the yards leveled with cinders, which will give the place a better appearance.

Entertained Under Ground.

Roy McNeill entertained several of his lady and gentlemen friends Friday evening with a party given some two hundred feet under ground, says the Herrin News. James Rollo escorted the crowd, taking them into the depths of Sunnyside mine. When the crowd was hoisted to the top they all looked like a party of colored people, and were wondering if it would really come off. In the party were Misses Stella McNeill and her friend, Miss Mildred McGinniss, of Alton, Fay and Carmen Youngblood and their friend Miss Isabelle Vandervost of Bloomington, and Messrs. Leo Will, George Crichton, George C. Blee and Ted McGonigal.

Spring Valley No. 1 to Reopen.

Announcement has been made by the officials of Spring Valley Coal Company that shaft No. 1 will be put in operation about September 1. This mine has been closed for some time on account of the lack of an escape shaft. Mine No. 2 was its escape, but when the former was destroyed by fire last winter, it left No. 1 practically a fire trap and in violation of the law. For the last few months work has been in progress on a new escape and this will be ready, it is

expected, by the first of next month. The announcement is good news in Spring Valley as it will liven business considerably. Residents of the town state that this has been one of the duller summers ever experienced there.

Benton Coal Company's Big Day.

The Benton Coal Company, Benton, Ill., made a record run when 1,990 tons of coal were hoisted in eight hours. This is thought to be the largest amount of coal ever hoisted from a mine in Franklin county in that length of time. The capacity of the Benton Coal Co.'s mine has been climbing toward the 2,000 mark for some time, and with another ten minutes' run on the above day that amount could have been hoisted.

Will Map Southern Coal Fields.

The Southern Illinois coal fields from Mt. Vernon, Indiana, to Murphysboro, Ill., have been under investigation since 1906, by the State Geological Survey and detailed quadrangle maps will be finished this season. This work will continue to be under the direction of F. W. DeWitt, acting director of the survey. The detailed studies in the Murphysboro area will be made by E. W. Shaw from headquarters at Murphysboro. He has been detailed by the U. S. Geological Survey for this purpose. The investigation of the Herrin and the West Frankfort quadrangles will be completed by G. H. Cady of the state survey, who will make headquarters at Benton. The surface drift deposits of these quadrangles will be studied by Mr. Shaw. This work has developed many facts of economic and scientific interest and preliminary reports and maps have already been published for the east half of the area, which includes Gallatin, White Hamilton and Williamson counties. The remaining maps will be prepared during the coming winter. Final reports will consider the entire belt, and will include detailed maps of the coal. Its out crops area, extent, depth, dip and quality, will be shown by appropriate maps, and these will have value also as showing favorable localities in which to prospect for oil. Inquiries about this work should be made to the main office at Urbana.

Mt. Pulaski Mine Sold.

The Mt. Pulaski coal mine was sold recently to Edward Buckley and W. P. Walsh, of Springfield. Both are young men and have had considerable experience in operating coal mines. They expect to make many improvements in the mine and employ more men.

New Mine at Marquette.

The Marquette Coal Company is completing arrangements to sink a new coal mine three miles south of Spring Valley.

In the Braidwood Field.

After an idleness of several months, due to closing of their old mine and the development of their new Shamrock, No. 4, the Murphy, Linskey and Kacher Coal Company is again at work in the Braidwood field. A force of seventy-five men was given a start and the number will be increased to several times that strength when the mine becomes fully developed. The laying of the track to the new location was completed Monday and the shipping of coal was begun in earnest.

The coal mining business is booming just now in that vicinity. The Joliet-Aurora Coal Company who have had charge of the Reliance mine, south of town through a lease from the Joliet-Wilmington Coal Company during the past year, is planning to reach out in a new field. This new and

promising concern recently purchased section 19, better known as the Blackstone lands. Good coal measures lie below the surface, while the surface itself consists of a growing oak forest that will supply the mines contemplated. The company has employed Thomas Cummings, an experienced driller, who with his force of competent men is busily engaged in drilling to find the depth of the coal stratum and the conditions existing there.

COAL AND OIL IN ARKANSAS.

Declaring the prospects of striking oil at 1,100 feet to be the most promising they had ever seen and that coal exists there at 150 feet below the surface, oil experts from Chicago, who were in Jonesboro, Ark., recently, have returned to their homes after assuring local and Illinois capitalists that an attempt to bore wells on a strip of land just outside Crowley's ridge two miles south of Bono would prove the above statement to be a fact. Therefore, boring will begin on a well by September 15th, at the latest, according to a statement made by Walker Willis, of the Arkansas Land Company, who has secured a lease on 2,600 acres of farming land situated in the belt where the oil experts claimed oil would be found. Illinois men are behind the move, and the boring apparatus will be shipped to Arkansas within the next few weeks from southern Illinois and will at once be set up and put in operation. An Illinois capitalist had come to Craighead county for the purpose of investing heavily in farm lands, and having owned several large oil wells in southern Illinois he noted at once what he thought to be signs of oil from the appearance of the soil and the vegetation. Several oil experts were brought to inspect the land. Each one declared that he found unmistakable signs of a plentiful supply of oil. They also reported that the land was rich in coal, which they declared would be struck at a depth of 150 feet. The oil, they said, would be struck at a depth of 1,100 feet. A company will be formed for the development of the oil lands and the organization will also develop the coal mines if the statement of the mineral experts is found to be true.

A DOUBLE CONCRETE SHAFT.

The Isabella-Connellsville Coke Company, through its engineers, George S. Baton & Company, has let the contract for two concrete lined shafts at its No. 1 plant. Both shafts are to be used for hoisting coal, the main shaft for charging the ovens, 500 of which will be located at this plant, and the air shaft for shipping coal. In addition to a large air compartment the air shaft will have two hoisting compartments, making it the largest concrete shaft in the region. The contract was let to Heyl & Patterson, of Pittsburgh, and it is provided that the shafts will be complete this fall. Both shafts are to be oval in shape and to be lined from top to bottom with concrete. The No. 1 plant is located near Arensburg, on the Monongahela railroad, in Luzerne township, Fayette county, Pa., and is one of the three plants being erected by the company.

NEW COAL DRILLING MACHINE.

A new coal drilling machine is the latest mechanical device to be issued from the large plant of the Hardsocg Manufacturing Co., Ottumwa, Ia. This drill has been in the course of manufacture by the Hardsocg people for the past six months and is now being marketed in the broad expanse of territory covered by them in their coal mining machinery. The states outside of Iowa covered by their salesmen are Missouri, Kansas, Arkansas, Texas, Indiana, Kentucky and throughout the northwest. The device is known as the improved "Q" drill and great results are looked for in the marketing of the drill.

THE CLASSIFICATION OF PUBLIC LANDS

Synopsis of Address of GEORGE OTIS SMITH, Director U. S. Geological Survey, at National Irrigation Congress, Spokane, Washington, August 11, 1909.

The necessity for classifying the public lands is not a recent discovery. The earliest land legislation in this country both contemplated differences in the quality and character of the public lands and planned for descriptions based on field examination. Yet even the honest administration of the land laws has ever been subject to criticism arising from the fact that no adequate provision was made for land classification.

A period of national awakening to the worth of the public domain followed the close of the Civil War and another epoch of realization by the nation of the true source of its wealth and prosperity has just opened, while both the legislative and executive branches of the federal government are awake to the fact that exact knowledge is essential to the proper utilization of our country's great resource of land. The earlier propaganda bore fruit in the creation of a scientific bureau, among whose functions was the classification of the public land, but this specific duty was subordinated to the more general task of determining the natural resources of the public domain. The duty of classifying the remaining unentered public lands is now definitely accepted by the United States Geological Survey and the opportunity earlier neglected has for several years been vigorously improved. The Survey is heartily co-operating with the General Land Office, to the end that the best disposition of the land may be secured, and it should be noted that no small part of the data utilized in this work represents the fruitage of the Survey's earlier general investigations.

Utilization the Keynote.

Utilization is the keynote of the present public land policy, and by utilization I mean not that kind of local development that is promoted by the "land skinner," but rather a development whose plan weighs national needs and calculates future demands and whose accomplishment will serve our country's development in the next century as well as in the present decade. Utilization is opposed to both non-use and waste.

A notable example of land classification in aid of proposed legislation is afforded by the Acts of March and October, 1888, wherein Congress directed that an irrigation survey should be made by the Geological Survey and that the reservoir sites and irrigable lands designated as a result should be reserved pending further legislation. The legislation of 1888 was itself the logical outcome of Major Powell's 1879 report on the arid lands and his subsequent work as director of the Geological Survey and the law that eventually resulted from the work thus authorized in 1888 was the Reclamation Act of 1902, through the operation of which the West is coming into its own as the garden of the nation.

Hydrographic and topographic surveys which are now in progress under instructions of the Secretary of the Interior have as their purpose the collection of information that may be presented to Congress in aid of legislation looking toward the best utilization of the water powers on the public domain. Reports on the mineral or non-mineral character of coal, oil and phosphate lands of which the Survey has made actual field examination are now being transmitted to the General Land Office. Another line of activity is the segregation of non-irrigable lands under the terms

of the "enlarged homestead act" of the present year. The existence of Survey data whereby within the few months since the passage of this law the Secretary of the Interior has been able to designate 162 million acres is in itself a forceful argument for an adequate land classification.

The classification and valuation of coal land is a special phase of public land work to which the Geological Survey is giving increased attention. The geologic investigations of the last three field seasons have not only furnished a knowledge of the quantity and quality of the coal on the public domain but have rendered possible the present policy of obtaining coal prices for coal lands. The General Land Office now depends on the Geological Survey to furnish detailed valuations for every 40-acre tract of coal land that is placed on the market. In the two and a half months following the adoption of the revised scheme of valuation the reports to the General Land Office released to agricultural entry approximately two and a half million acres in Colorado, Wyoming and Montana and placed selling prices on nearly 400,000 acres of coal land with an aggregate valuation of over \$15,000,000. The price of government coal land is now determined on the basis of estimated tonnage, the unit rate varying with the quality of the coal from ½ cent to 3 cents a ton for coal deposits within 15 miles of a railroad. These prices average less than one-tenth the usual royalty paid in the West. Yet this conservative valuation will more than double the average price of public coal lands. In exceptional cases the price based on tonnage represents a fifteen-fold increase over the old minimum price. It is conceded that this policy of basing the price on the quantity and quality of the article sold will not encourage purchase by speculators, but I maintain that the government valuation will not impede the disposition of the coal deposits for purposes of utilization. The real development of the West will be promoted, not retarded. The increased valuation of the millions of acres of public coal land must result in increased contributions to the Reclamation Fund and greater possibilities for local utilization of the agricultural lands through irrigation.

Relative Worth Winning Recognition.

A principle that is winning increased recognition in land legislation is that of relative worth. The present coal land law expresses this principle by giving gold, silver and copper deposits priority over the coal, and the coal in turn preference over agricultural values. These distinctions necessitate land classification based on adequate field examination. Wherever the different values can be separated that separation by appropriate legislation is at once the easiest and best solution of the problem, and the first step in this direction was taken in March of this year in the passage of the Mondell Act, whereby the homeseeker may secure all for which he makes entry—all that he swears he is getting—while the coal beneath his tillable land is reserved to the nation for future disposal.

The ideal land classification is that based on field examination, scientific and detailed enough to include every natural resource; the ideal land legislation is that which fully recognizes the principle of relative worth; and the ideal land administration is that which will assure the reservation or the disposition of the land for its highest use.

AVERTED STRIKE DANGER IN THE PITTSBURG DISTRICT

All danger of a coal strike in the Pittsburgh district has been averted. The conference which was held by National President Thomas L. Lewis, members of the international board of the United Mine Workers and officials of the Pittsburgh Coal Company came to a close after an agreement was signed which was declared to be satisfactory to all persons concerned, as well as in exact pursuance of the provisions of the existing contracts between the company and the union men.

The agreement is said to bring the growing dissension between the officers of the local district and head of the National organization to a crisis, however, and the miners are anxious to see how President Francis Feehan of the local district will regard the matter, as National President Lewis spares no words in declaring that his interference was made necessary only by the unwarranted action of Mr. Feehan in calling a strike while international board members were at work adjusting the differences.

General Manager G. W. Schleudenberg of the Pittsburgh Coal Company, in whose office the conference was held, joined with Mr. Lewis in expressing his satisfaction with the agreement reached. Michael Barry of Michigan and Stephen Whetel of Brownsville, Pa., International board members, Vice President George Z. Hosack and J. M. Armstrong of the Pittsburgh Coal Company, also aided in adjusting the differences.

Seen just after the conference had closed, Mr. Lewis said: "The conferences just completed have resulted in the complete adjustment of every proposition submitted in exact accordance with the provisions of the contract existing in this district, and what has been done is only what could have been done easily without the issuing of a strike order, and what would have been done by the members of the International board had not their work been interrupted by a strike order. The board members had begun the work well before that strike was ordered."

Asked if the officers of the local board would be consulted in the matter or whether they would have anything to say as to abiding by the agreement, Mr. Lewis said: "They have not and will not be consulted. They are at liberty to say what they please, but the international board is supreme in these matters and they must abide by its decision or quit the union."

"Do you think the men are likely to quit?"

"According to the terms of the agreement the men would have no reason for seceding from the union and they won't."

President Feehan and the other local officials still resent very forcibly Mr. Lewis' attitude.

NEW OFFICERS IN DISTRICT 19.

The annual meeting of the United Mine Workers of District 19, East Tennessee and Southeastern Kentucky, discussed various affairs of interest to the organization and elected officers for the ensuing year as follows: International board manager, T. J. Smith, Graysville, Tenn.; president, T. J. Dunnaway, Pittsburgh, Ky.; vice president, Pat Cary, Whitville, Ky.; secretary-treasurer, J. S. McCracken, Knoxville, Tenn. Board members of district—J. O. Tunstall, Indianhead, Ky.; George Bannon, Soddy; D. A. Vess, Jellico; E. L. Tucker, Straight Creek, Ky. Auditors—T. M. Gan, Soddy; James Ellis, Stearns, Ky.; Tom McIlhenn.

Pittsburg, Ky. Tellers—Milt Harlin, Straight Creek, Ky.; D. C. Vest and S. B. Leath, Alma. Delegates to State Federation of Labor, T. J. Smith, J. S. McCracken and J. L. Kensee; delegate to the Kentucky Federation of Labor, T. J. Dunnaway; delegate to the Kentucky State Legislature, W. W. Angell.

MINING MACHINERY BUSINESS IMPROVING.

Robert H. Jeffrey of the Jeffrey Manufacturing Company, in speaking of the orders being received at the big plant, said that business in all the lines of the company is better now than at any time since October, 1907, and that in the conveying and elevating departments the improvement is specially noticeable. In the mining department the dullness in the coal trade has held business back, but this department has much repair work on hand and also has been erecting some large tipples for West Virginia companies. The Jeffrey company is now erecting one of the largest steel construction buildings ever put up in Ohio. It will cover the immense stock yard of the company and will be completed within a short time. The building is equipped with new unloading and handling machinery, by the aid of which cars of material which it formerly took more than a day to unload can now be unloaded within half an hour. The machinery is capable of handling the largest structural steel beams.

POLK COUNTY, IOWA, COAL.

One million and a half tons of coal were mined in Polk county from July 1, 1908, to June 30, 1909, according to a preliminary estimate recently given out by L. E. Stamm, secretary of the Iowa state mine inspectors. The increase is probably more marked in the vicinity of Des Moines than in any other section of the state, though the reports of the First and Third districts have not been returned to the state office. In the year from July 1, 1907, to June 30, 1908, there were 1,358,097 tons of coal mined in this county. The tentative figures made from the reports received thus far indicate that the increase will carry the total production of the Polk county mines past the 1,500,000 mark easily. The statistics now being gathered by the inspectors will be used in the biennial report of the state mine inspectors. At the present time the secretary is completing figures for the first half of the biennial period.

ABUSE OF THE CERTIFICATE LAW.

Without going into the merit of the specific question raised by the convention in session in Wilkes-Barre on Wednesday, it is apparent that no act of the legislature for the welfare of the underground workers has been made more worthless than the one creating boards of examiners to pass upon the qualifications of those who desire to work amid the dangers of the collieries. If the enforcement of the law were in the hands of the operators, the miners would long ago have created the demand for a change. But the operators are absolved from responsibility. When the employe is given a certificate of competency the operator is supposed to accept it without question. If the result of the examinations is not what it should be, the way is open for a betterment of conditions, and it can be brought about if the miners, through their union, make some effort. —Wilkes-Barre, Pa., Record.

Another new high record in the weekly coal and coke tonnage originating along the lines of the Pennsylvania east of Pittsburg and Erie was made during the week ending June 19th, when 1,025,763 tons were handled. This compares favorably with the high tonnage mark of 1907, when every freight car owned by the Pennsylvania was in service.

KNOXVILLE HEADQUARTERS OF A GREAT COAL FIELD

Knoxville is the headquarters of a great coal area, and of great possible production of high class coal. It is estimated that the value and returns for the coal produced by and shipped from what is generally known as the Tennessee district alone, embracing the Middlesboro, Jellico, Coal Creek and LaFollette territories and intermediate points, these being nearest to Knoxville—is six million dollars (\$6,000,000) representing 5,000,000 tons annual output. The main offices of practically all of the companies mining this coal are located in Knoxville. This production comes from operations employing directly less than six thousand acres of land. When it is borne in mind that the estimated acreage of the entire domain covered by our initial reference and all of which is logically tributary to Knoxville is five million acres and carrying from three to six separate measures, offering a possible tonnage of 80,000,000,000 and with substantially all of four states and the major portion of six others, dependent upon the cost here than any other, some conception may be formed of the magnitude of future developments possible and practicable.

The Appalachian coal fields, embracing the Cumberland range of mountains traversing almost all of the southwestern part of Virginia, southeastern Kentucky and Eastern Tennessee, offers opportunity for the greatest production of coal and coke than considered as a whole, the highest class produced in the United States if not in the world.

The thickness or size of coal measures in this immense territory, its general character and formation, together with the presence of unlimited timber supply and other natural advantages will permit of a lower cost of production than any other known producing district.

This vast area is practically untouched; only the outer edges having been invaded by railroads and producing developments. There are abundant prospects now, sure indications and certainly every reason, that this favored section will, in the near future, develop into the most extensive coal interest in existence. This will mean millions to Knoxville, the logical center and headquarters for this development.

MINE OWNER SENT TO JAIL.

Acquitted of a criminal charge growing out of the shooting of John Lawson, but afterward mulcted in damages of \$2,000 in a civil suit brought by Lawson, Perry Coryell, a prominent coal operator of Newcastle, Col., has been sentenced to six months in the county jail for failing to pay the damages. Lawson was a leader of the striking coal miners at Newcastle in 1904, but left the state during the strike. He returned several months later, and met Coryell on the street in Newcastle. Hot words passed between them and Coryell emptied a charge of buckshot into Lawson's leg. Lawson, having won his suit for damages, could find nothing on which to levy execution, Coryell having transferred all his property.

MOYER HEADS WESTERN MINERS.

Charles H. Moyer was unanimously re-elected president of the Western Federation of Miners at the Denver meeting, August 3d. This is Mr. Moyer's eighth term in that office. These delegates to attend the conference with delegates from the United Mine Workers of America were elected: Charles H. Moyer, Denver; C. E. Mahoney, Butte; James E. Cannon, Bisbee, Ariz.; Charles A. Blackburn, Butte; M. J. O'Conner, Globe, Ariz.

LESS ALABAMA COKE SHOWS INCREASED VALUE

For a quarter of a century, from 1880 to 1905, Alabama and West Virginia were close rivals for second place in the rank of coke-producing states, and during the last 5 years of that period each state held the place alternately. Since 1905, however, West Virginia has outranked Alabama and in 1907 produced over a million tons, or about a third more coke than her rival. It would appear, therefore, that West Virginia is permanently established as second among the coke-producing states. In 1908 West Virginia produced nearly 275,000 tons more than Alabama.

Alabama's production of coke decreased from 3,034,501 short tons in 1906 to 3,021,794 tons in 1907 and to 2,362,666 tons in 1908. The value, however, increased from \$8,477,899 in 1906 to \$9,216,194 in 1907, but fell off to \$7,169,901 in 1908. The decrease in 1908 as compared with 1907 was 659,128 short tons, or 21.81%, in quantity, and \$2,046,293, or 22.2%, in value.

The coke manufacturers of Alabama possess an advantage over those of West Virginia in having a home market for their product. This is illustrated particularly by the difference in value between Alabama's production and that of West Virginia. While West Virginia coke is certainly of as good a quality as that of Alabama the value of the smaller tonnage of Alabama in 1908 was greater by over \$1,900,000 than that of the larger production of West Virginia. Notwithstanding the depression in 1908, the average price per ton of Alabama coke declined only 1 cent from \$3.05 to \$3.04, while that of West Virginia declined from \$2.36 to \$2.00.

There were 45 coking establishments in Alabama in 1908, an increase of 2 over 1907. The total number of ovens increased from 9,889 to 10,103. Of the 45 establishments 10, with a total of 1,885 ovens, were idle during 1908, as compared with 6 idle establishments having a total of 715 ovens in 1907. There were no new ovens building at the close of 1908.

The establishments in Alabama include 2 by-product recovery plants with a total of 280 ovens, all of which were operated during the year.

Considerable increase is noted in the percentage of coal washed before coking in 1908 as compared with 1907. In 1907 the total quantity of coal washed was 3,924,956 short tons, or 79% of the total. In 1908 the quantity of coal washed was 3,274,480 tons, or 84% of the total. Of the coal used for coke making in 1908, 2,005,453 tons was run-of-mine and 1,871,338 tons slack.

THE RHODE ISLAND COAL MINE.

The prudent New England people, says the Baltimore American, seem to be a trifle cautious about investing money in this Rhode Island coal-mine enterprise. It is said somewhat lugubriously that "If this property were located in Pennsylvania or West Virginia or some far-away place, people would invest in it; but, being in Rhode Island, the Rhode Islanders cannot believe that it is of value." Perhaps, in the phrase of a well-known advertiser, "there's a reason." The effort to place Rhode Island coal on the market is no new thing; it has been tried before. Hence the absence of New England enthusiasm over the proposition to resurrect the enterprise.

Redlick Run Coal & Coke Company, Clarksburg, W. Va.; capital \$74,945. Incorporators: Isaac G. Robby, Robert M. Carroll, Edward D. Brown, Uniontown, Pa.; Samuel G. Rotharmell, Robinson G. Weltner, McClellandtown, Pa.



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Useful Diversions.

EMANUEL SWEDENBORG.



THERE is an affection in every employment, and it gives the spirit energy, and keeps the mind intent upon its work or study.

This, if it be not relaxed, becomes dull, and its earnestness flags—as salt that has lost its savor, so that it has no pungency or relish; or as a bended bow, which, unless it be unbent, loses the power that it derives from its elasticity. Just so the mind, kept from day to day in the same ideas, without variety. So the eyes, when they look only at one object, or continually upon one color. For, to look continually at a thing which is black, or continually at red or white, destroys the sight. Thus, if one looks continually at the snow the sight is destroyed; but it is enlivened if he looks in succession or at the same time upon many colors. Every form delights by its varieties—as a garland of roses of different colors arranged in beautiful order. Hence it is that the rainbow is more charming than the light itself.

It is proposed to reduce the size of our paper money. Inasmuch as a bill will now buy far less than when the present size was inaugurated, it is just as well to make them smaller.

PRESIDENT OF THE MINE WORKERS.

The present prospect is that there will be a lively campaign for the presidency of the United Mine Workers of America in the latter part of the present year. Two candidates are announced, William Green, of Ohio, and the present incumbent, Thomas L. Lewis, of the same state. The campaign of Green was launched by his friends preceding the formal announcement of Mr. Lewis that he would be a candidate. Not that there was any doubt in the matter, for Mr. Lewis's intention to be a candidate has never been in any way questioned. The announcement of Mr. Green's candidacy was made, of course, with a view of getting the best of the get-off if possible, and the fact that it was the voice of a large and respectable element of Ohio miners, men who had in his two preceding campaigns supported Mr. Lewis, was calculated to weaken the present President of the organization.

Following the action of the Ohio contingent supporting Mr. Green, the acceptance of the invitation to run by Mr. Green was at once followed by action of the Illinois Mine Workers' officials adopting the same resolutions that passed the Ohio body. That would indicate that the officials at least of these two leading coal producing states are lined up in opposition to Mr. Lewis for a third term. It is out of FUEL's province to take sides in an election that is purely a part of the business of the mine workers, but the campaign is one in which all interested in the coal trade will take part to the extent of watching the course of events. The resolutions that were adopted as an explanation of the course of the Ohio miners in taking up a new candidate were followed by a letter to Mr. Green which states that:

"The present state of the organization is very unsatisfactory in practically all the districts comprising the international organization. Discontent is evident, while division and discord is increasing. Upon the adjournment of the last International convention, we entertained the hope that ere this, those elements of weakness would be greatly reduced, if not altogether overcome. In this we have been disappointed, therefore, in the interest of our organization we feel it our duty to take such steps as will restore confidence among the rank and file and unite all the forces."

The letter addressed to Mr. Green and signed by all the officials of the Illinois mine workers was of very similar nature, saying:

"Dear Sir and Brother: In view of the disgraceful scenes and the factional strife that took place in our last international convention, and in view of the fact that the dissension and discord has not been eliminated, but to some extent has been intensified, which if continued, can only result in weakening our forces if not actually destroying our organization.

"And believing that our organization should exemplify all that the word 'union' implies, which cannot be done in its present divided state:

"And with a sincere desire—and that only—of trying to secure the best results for our entire membership, eliminate factions, and cement more firmly into a compact whole, the various forces.

"We ask you to become a candidate for the position of International president, with the sincere hope that you can see your way clear to accept, believing that your experience and knowledge of affairs pertaining to labor are such as to

fit you for this work in a manner few men in our movement can equal.

"Trusting that you will give this matter your earnest consideration and feeling assured that if you do you will be elected and that different factions will again be united into one harmonious organization, and with renewed energy battling for the rights of the workers, we are fraternally yours.

Mr. Green thereupon announced his candidacy, which was followed by the following announcement of Mr. Lewis in the United Mine Workers Journal of the past week: To the United Mine Workers of America:

Reports have been circulated in a number of newspapers to the effect that I may not be a candidate for re-election as president of the United Mine Workers of America.

To set at rest all doubts in regard to this matter, I desire to state that I will be a candidate for re-election to the position of President of the United Mine Workers of America.

The entire membership of the organization is not only invited, but urged to investigate whether or not I have endeavored to defend their interests at any and all times.

Yours very truly,

T. L. LEWIS.

AN ACHING VOID IN TENNESSEE.

In the high tide of prohibition that has swept over the hills and vales, the mountains and valleys, the country and the towns and the cities of old Tennessee, there have been wrecks innumerable, losses beyond computation, the passing of many things to which we had grown accustomed. In one's daily perusal of the newspapers from home, some of these things already we sorely miss; for some the kindly years shall bring an opiate, for some, perchance, on some sweet day we'll find a satisfying substitute. Those still residing in the Volunteer State who after many sad experiences have learned to do with near-lemonade at the circuses, near-oyster-stews at the church festivals, near-pie at the lunch counters, near-wool winter clothing with near-silk linings from the near-infant protected industries, and near-presents from loved though wealthy relatives at the happy Christmas times, may, as the days keep going by, get hardened even to the taste of near-beer and to the wonderful experiences of near-prohibition.

But in the galaxy of glorious things that are gone, supposedly gone to return no more, there is one for which we have seen no effort to find a near-substitute. The vacancy faces us every time we read the society columns in the Memphis, Nashville, Chattanooga and Knoxville papers—staring at us with mournful eyes and speaking with a nameless twang out of each written and printed item chronicling the splendid times that were had at Miss Bobolink's coming-out party, or at Mrs. Fitzgiving's bridge-whist evening. We still see the old and loved familiar "color schemes" of pink, or of blue, or of red, or of orange, or of pale green, or of lilac, perchance; we still thrill while we read as of yore of the mantels and walls banked with an American Beauty rose, and of those more attractive American beauties who dance and talk and bank the divans, the cosy corners of the conservatories, and the cool settees on the shaded piazzas; we still note affectionately that all our charming friends are described as wearing near-gowns entirely different from

those worn at the latest preceding functions, and some as wearing gowns and near-gowns that were not even there; we still enviously con the names of those that wear pearls or diamonds, or near-pearls and near-diamonds; we feel like our old self in enthusing over the statement that this was the entertainment that sets a mark for future functions of a kindred nature; we see again in fancy the dazzling lights that scintillate while illuminating the halls, and again we catch the heavy odors of the perfumed flowers that fill the rooms; we close our eyes and feel the atmosphere of near-mirth and laughter; our trusty recollection tells us of the flow of wit and near-wit, and our mental vision sees the sumptuous repast, the mere announcement of which causes the grand rush on the tables that figuratively groan. We read and know all this, strangely familiar the while, and yet there is a something lacking, something that is gone from out the synchronous, harmonious, otherwise satisfying blending of the things that always were? What is this absence, tearing such a plug out of the picture as to mar the tout ensemble of her most ambitious word-painting, and leave the best literary effort of the society editor short of the former mark of her high calling? Can it be—yes, it is—we see no more the name and station of the one who "gracefully presided at the punch bowl."

The people will be consulted as to their views on the tariff during the coming Presidential tour. The people will also be consulted when the time rolls around to hold another Congressional election, if we are not mistaken. The trouble with the mass of the people is that they know nothing about the tariff or its effect and believe pretty well anything a good "jollier" comes along and tells them.

It is a blooming shame that the slot machine folks were not asked to test the pennies in their penny-traps before the design was agreed to. The interests should not be neglected in that way. All the machines can be altered for less money than the coinage can be done over, but the government has the most money, or can get it from the people who patronize the slot machines somehow.

A lady orator says that when men addicted to an occasional drink die they will go to the bad place—but she didn't call it that. She says their punishment will be that they take their thirst with them and will find no buffet in that land, not even a rathskeller. That would be hot enough for you. But how does the lady know?

After reading the printed report of the legislative committee of the coal miners concerning the results of the recent legislative session we conclude that the committee's definition of a "real good and competent" legislature is one that does what the miners tell it and wastes no time in consulting the operators about it.

That chemical lately discovered which makes Rhode Island "coal" burn when applied to the surface might be tried with some success on paving stones, brickbats, etc. It would enlarge the fuel resources amazingly, if it worked.

DETROIT SEES UNFAIRNESS IN THE NEW COAL RATE

It has been called to the attention of the transportation committee of the Board of Commerce that one of the latest coal tariff schedules evidences an opportunity to secure a material reduction on coal rates into Detroit, especially from the Ohio coal fields. The tariff in question makes a reduction of 20c per ton from the Pennsylvania fields, but it eliminates Detroit.

It is difficult to understand why this rate should not have been made to include Detroit, since Wyandotte, nine miles away, has it, says the Detroit Tribune. All points, including Wyandotte and south—and this means Toledo, too—are given an advantage in the rate of freight on coal from two very large coal districts.

If, for example, the railroads could be induced to make a similar reduction in rate from the Ohio fields into Detroit, it would mean a figure of 95c a ton, which was the rate formerly when Detroiters bought coal at a better figure than they are now paying. This new tariff simply means the opening of two new fields of coal to manufacturers and purchasers in Wyandotte and Toledo, but denies the advantage to Detroit manufacturers, although separated by only nine miles. It is believed that the Board of Commerce will be successful in inducing the railroads to give Detroit the same benefits in this particular as Wyandotte and Toledo now enjoy.

There is another side to the question. Detroit was formerly quite an exporting center for coal going into Canada. In the last few years Buffalo, which has contended with Detroit for Canadian business, has enjoyed two reductions in the rates to that point for Canadian shipment. Their present rate on coal from the Pennsylvania districts is \$120 to that point, and from the same districts to Detroit for shipment into Canada it is \$140. The rate of freight now in effect from the Pennsylvania district to Wyandotte is but \$120 and the mileage is 316.8 miles or 355.8 to Detroit. The mileage on Ohio coal upon which Detroit is now paying \$115 freight is 231.7 miles from the Hocking districts and 263 miles from the No. 8 Pittsburg districts. This new rate seems clearly a discrimination in favor of Wyandotte and points south, and is also a discrimination against those fields which are located more favorably to this market.

WILL BRIQUET MONTANA LIGNITE.

A company has been organized in Butte to establish a new industry in Montana for making fuel briquettes from lignite. The company has secured possession, by purchase, of a large bed of lignite about 27 miles from the town of Deer Lodge. Robert L. Gilbert of Salt Lake is at the head of the company.

Making coal briquettes is a new industry in this country, although in Germany, according to the consular reports, there are 300 coal briquette factories running, operating 700 presses that work up annually 45,000,000 tons of lignite coal. In addition to that, there are 25 coal dust briquette factories, working up otherwise worthless coal dust, turning out 25,000,000 tons of briquettes yearly. The briquettes, according to the consular reports, make an almost perfect fuel for domestic and steam uses, as they are practically smokeless and leave only 4 per cent ash. The government geological reports give account of 55,000 square miles of lignite beds in the Dakotas and Montana, all near the surface of the ground and ranging in thickness from 20 to 80 feet. There are also great deposits in other states, es-

pecially in the south and west, and it is stated by the geological bureau that it must be from these hitherto practically neglected deposits that an inexhaustible future supply of smokeless domestic fuel will be derived.

MILLION TON DOCK AT SUPERIOR.

An immense coal handling dock, 2,500 feet long and 320 feet wide, with a storage capacity of 500,000 tons and a handling capacity of over 1,000,000 tons per annum and costing \$525,000, will be erected at Superior, Wis., by the Carnegie Dock and Fuel Company, a subsidiary company of the Carnegie Coal Company of Pittsburg. The contract has already been let and the work started and the company expects to have the dock in operation before the lake carrying season is ended.

The company has leased from the Great Northern Railroad Company for a term of 30 years their coal and ore dock at Superior, known as No. 5, and also has leased for the same term 500 feet of lake frontage, which is to be the shore end of the new dock. This will give them a total of 3,800 feet of dockage.

The latest type of electrically operated coal handling machinery will be installed, including three steel bridges, two for the handling of soft coal and the other for hard coal. The two bridges for the soft coal will be able to handle 5,000 tons a day of 10 hours.

THE PEAT FOUND IN FLORIDA.

Peat has been mined in Florida for several years. Two plants are now being operated during all or part of the year. Briquetting, which was formerly used, has been abandoned by this plant as impracticable, but the product of the bog has been used as fuel under the boilers, and also as a gas producer. Experiment and analysis have proved that the Southern peat stands high in the list of gas producers and as a source of power, and this probably affords a most promising outlook for the future. The great abundance of coal in the United States has doubtless delayed the development of the peat industry. At Jacksonville the price of sea-borne coal is very low, and while peat has been prepared successfully for fuel under the boilers of the city electric light plant, the number of heat units which can be bought with a given sum invested in coal is greater than can be obtained from the same sum invested in peat.

INDIANA COKE PRODUCTION IN 1908.

For the first time since 1903 Indiana appears as a coke producer in the reports compiled by E. W. Parker and issued annually by the United States Geological Survey. The output for 1908 was obtained from 10 ovens constructed during the year by the United Fourth Vein Coal Company at Black Creek. The coal used was unwashed slack, and the total amount of coke produced was 1,747 short tons. The 36 ovens of the Ayrshire Coal Company at Ayrshire have not been operated for several years. During 1908 the Citizens' Gas Company of Indianapolis began the construction of 50 United-Otto ovens, and these will possibly be completed and placed in operation before the close of 1909. The probability is that West Virginia coal will be used in these ovens.

FOREIGNERS INTERESTED AT CUMBERLAND GAP

A stock company, representing \$30,000 of foreign capital, will open a coal mine in the gap of the mountain at Cumberland Gap, on the Kentucky side. An incline to bring the coal down the mountain to the railroad will be constructed. Mr. Ritchie, of the company, is arranging to begin work. The company is a strong one.

BRIQUETTED COAL AND ITS VALUE AS A RAILROAD FUEL

A Paper Read Before the International Railway Fuel Association, Chicago, June 23, 1909, by
CHARLES T. MALCOLMSON, Briquetting Engineer Roberts & Schaefer Co., Chicago.

The conservation of our fuel resources, which has become a subject of active interest in past few years, is exemplified in the history of the briquetting industry as we follow its development in Europe and later in this country. We may naturally expect to find its inception in the countries where a thrifty people have learned to husband their resources and turned to good account their poor or depleted fuel supply. A country like ours, of such wonderful natural resources and so profligate in their use, does not offer the proper stimulus to an industry which depends upon trade conditions of high prices where close profits have forced economy in the small detail of saving.

Nomenclature.

The name "briquet," which is now universally used for all forms of compressed fuel, was applied originally in Paris to fuel made from peat with the addition of wet clay, similar to our present day methods of making wet clay bricks. The term was later made to include all fuel made by compression without the use of a binder in contradistinction to that made from bituminous and anthracite coal with pitch or other binders. We find numerous other names used, such as "boulet," "charbon agglomerés," or "houilles agglomerés," abbreviated to "agglomerés" in France; "briquettes de charbon" in Belgium; "patent fuel" and "compressed fuel" in England; "kohlensteine" or "kohlenzeiglen" in Germany, applied generally to briquets made from true coals with binder; while "artificial fuel" embraced all fuel manufactured from coal, lignite, peat or other form of combustible.

In America the word "briquet" has been accepted as a generic term for the product, while specific names such as "pressed fuel," "coalette" and "carbonet" are found in the trade. "Eggettes" are generally applied to briquets made on the so-called "Belgian roll" type of press, a name said to have been invented by Mr. Ware B. Gay for the product of a Loiseau press of this type. Fig. 1 shows samples of American made briquets.

Historical.

The earliest record on the briquetting of coal was suggested in a pamphlet by Sir Hugh Pratt in 1594. The first satisfactory briquetting machine was built in France in 1842 by M. Marsais. And, since that time, the industry has gone steadily forward in all the European countries. The first briquetting plants were installed in England in 1846, Belgium in 1852 and Germany in 1861. About 1870, the briquetting of brown coals was first successfully accomplished in the latter country.

Prominence was given to the industry by the exhibits of briquetting machinery at the Paris Exhibition of 1867, and the following year we find the first recorded interest for coal briquetting in America. In 1870 E. F. Loiseau installed at Port Richmond, Philadelphia, the first coal briquetting plant. The press used was of Belgian type known as the "Loiseau rolls" and made eggettes weighing about eight ounces, using 92% anthracite culm and 8% clay as a bond. These briquets were waterproofed with a varnish of shellac and benzine, but the cost was prohibitive. The plant was never a success, either mechan-

ically or commercially, and was finally abandoned, but it marks the first step of the briquetting industry in this country and had its influence on the future, not without, we believe, beneficial results.

The Delaware and Hudson Canal Company built a similar plant at Rondout, in 1876, which was later absorbed by the Anthracite Fuel Company in 1878 and operated until 1880. This plant also briquetted anthracite screenings using pitch made from gas house tar as a binder. The third plant in the east to use the Loiseau roll press was built at Mauch Chunk, Pennsylvania, and was short lived. The binder in these briquets made a smoky fuel which disintegrated in the fire and was otherwise unsatisfactory.

The next important plant established in the United States was at Mahanoy City, Pennsylvania, in 1890, by the Anthracite Pressed Fuel Company. The plant was designed by the Uskside Engineering Company of Newport, England, using a Stevens press. The briquets were rectangular with an eagle on one side and the word "Reading" on the other and weighed eighteen pounds. The plant had a capacity of 400 tons per day of ten hours. The dies were changed later to make two-pound briquets and the capacity reduced to 300 tons. The binder was pitch made from coke oven tar imported from England and 8% was used in making the briquets. The Philadelphia and Reading Railroad expected to save \$50,000.00 a year in their fuel by means of this plant, but the briquets were not satisfactory owing to the high ash content of the culm and the excessive cost of binder. The plant failed in 1892 owing to a slump in the price of coal and inability to get sufficient quantities of

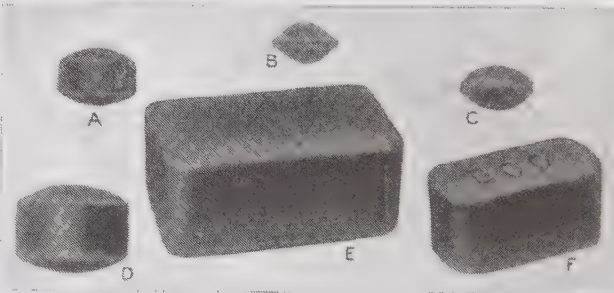


FIG. 1 SAMPLES OF BRIQUETS,

- A. Briquet made by U. G. I. Co., Philadelphia.
- B. Briquet made on Zwayer press.
- C. "Eggette" made by Salvay Process Co., Detroit.
- D. "Carbonet" made at Hartshorne, Okla., plant.
- E. Briquet made on Johnson press.
- F. Briquet made by Briquette Coal Company.

binder, but it is noteworthy as marking the first important attempt to make briquets for railroad purposes.

In 1892 Mr. Ware B. Gay built a plant at Gayton, near Richmond, using one set of Loiseau rolls for the briquetting of Virginia semi-anthracite slack and using coal tar pitch as a binder. The capacity of this plant was doubled later. Similar plants were installed at this time at Milwaukee and Chicago for briquetting anthracite dust and bituminous slack made at transfer plants in these cities. In

the dull coal season the Chicago plant made briquets of iron ore dust for the Illinois Steel Company.

A more pretentious plant was built in the same year at Huntington, Arkansas, under patents of M. Nirdlinger, controlled by the National Eggette Coal Company of New Jersey. The Huntington plant made briquets of a mixture of Arkansas semi-anthracite and bituminous coals, using hard pitch and coal tar as a binder. These plants failed generally because of inexperience in preparing the coal which, as a rule, was too dirty; inability to get uniform pitch of the proper specifications; the expense of briquetting; and the cheapness of the coal with which the briquets must compete. These observations were made by Mr. Gay in referring to the Richmond plant, to which he added that "prismatic shape is less desirable than one affording better combustion by forming interstices between the pieces, especially when used for domestic purposes."

Recent American Plants.

We find the next development of the briquetting industry in California, where more actual progress has been made than in any other locality, although at the present time no plants are operating. The first plant was built at Stockton, California, to make briquets from lignite mined at Tesla. Bituminous screenings were mixed with the lignite and asphaltum residuum from the distillation of California petroleum used as a binder. The press was designed by Mr. Robert Schorr of San Francisco, and combined the continuous operation of the rotary type with the exactness and efficiency of the plunger press. Two presses were installed having a capacity of 125 tons per day of "boulets" weighing from 6 to 8 ounces. The Mammoth Oil Refining Company, a subsidiary enterprise, spent considerable money in developing a distillation plant for making briquetting pitch. The plant burned in 1905. These briquets were used on the San Francisco and San Joaquin Railway and made a satisfactory locomotive fuel, eliminating the objectionable features of raw lignite.

Another Schorr press was installed at Oakland, California, by the Western Fuel Company for briquetting the accumulations of slack coal on its docks. The operations of this plant were discontinued at the time of the earthquake when the price of pitch became prohibitive.

A briquet press of novel design was built by Mr. C. R. Allen and installed at Pittsburg, California, for the briquetting of lignite mined at Somersville. This press was on the order of the roll type, making a cylindrical briquet weighing 8 to 10 ounces. The plant had a capacity of 5 tons per hour using asphaltic pitch as a binder.

The Standard Coal Briquetting Company of Oakland and the American Briquetting Company of San Francisco made unsuccessful attempts to produce commercial briquets, which failed on account of economic conditions already mentioned. The latter plant experimented with Coos Bay lignite mixed with coal yard screenings.

The Arizona Copper Company, Clifton, Arizona, is making briquets for its own use, from the slack of sub-bituminous coal mined at Gallup, N. M. A Yeaton press built in England is used, making four-pound briquets of prismatic shape at the rate of about $2\frac{1}{2}$ tons per hour. Asphaltic pitch is used as a binder. The economic value is found in the storing qualities of the fuel made from a slack that will either "fire" or at least deteriorate rapidly when stored. Coke breeze, hitherto wasted, has also been mixed with the slack coal.

The Washington Coal Briquetting Company of Seattle have built a plant using a plunger type press designed by Mr. Henry Mould of Pittsburg, constructed along the lines of his press for briquetting flue dust and ores. This plant was completed in 1908, but up to date has not made a com-

mercial product. It was designed to utilize the slack from low-grade fuels sold for domestic purposes in Seattle. A press of the couffinhal type, built by the Coal Briquette Machine Company of Oshkosh, Wis., has been installed at Sheboygan to briquet anthracite dust from the coal yards. This plant installed in 1907 has not yet been put in commercial operation. The briquets are cylindrical and weigh about 12 ounces. The press has a capacity of 4 tons per hour.

The National Pressed Fuel Company has installed a press and plant designed by George W. Ladley and sold a limited amount of briquets in Indianapolis last winter to domestic trade. The press is an adaptation of the Brogneux rotary type, and belongs to the same class as the Schorr press, combining the rotary and reciprocating types. It has a capacity of 12 tons per hour of 6-ounce briquets, cylindrical in shape, made from southern Indiana screenings and hard coal tar pitch. About 8% of binder is used.

The National Fuel Briquette Machinery Company has a small plant at the foot of Court street, Brooklyn, for demonstrating the Devillers press. The press is of the Belgian rolls type, has a capacity of 5 tons per hour, and makes an eggette weighing about 2 ounces out of small-sized anthracite and coal tar pitch imported from Europe. The briquets are sold for domestic purposes. (One of these presses was purchased about a year ago by the Consolidated Gas Company of New York to make briquets from coke breeze, but the product has not yet been marketed.)

The Zwayer Fuel Company of New York is one of the pioneers of briquetting in this country and has developed an efficient press of the Loiseau type having a maximum capacity of 15 tons per hour of 2-ounce briquets. The briquets are pillow shaped, that is, rectangular in plan, but ovoid in both cross sections. This shape is a development on the one advocated by Hütteman and Spiecker and is designed to economize the effective area of the rolls and reduce the amount of waste in briquetting. Several plants have been built by this company in and about New York, in the past ten years, marking the perfection of their press and other equipment. At the present time the only operating plant is at Perth Amboy, owned by the New Jersey Briquetting Company. The product is loaded mechanically in barges direct from the storage bins at the plant, and sold in New York and Brooklyn in competition with stove sizes of anthracite. The briquets are made from anthracite screenings with 10% of hard coal tar pitch as a binder. The most important plant using the Zwayer press and process is at Bankhead, Alberta, Canada, at the breaker of the Bankhead Mines, Ltd. This plant has been operating since 1906 and has recently doubled its capacity, making during March, 1909, over 15,000 tons of briquets. The coal used is a friable semi-anthracite, and about 10% of coal tar pitch is used as a binder. The output is sold principally for domestic purposes and shipped as far east as Winnipeg.

A press of similar design is manufactured by the Mashek Engineering Company of New York. One of these presses is installed at a plant of the D. Grieme Coal Company, West 27th street, New York, making briquets of anthracite buckwheat and coal tar pitch binder.

The United Gas Improvement Company of Philadelphia and the Solvay Process Company of Detroit have done considerable work in developing the briquet industry, as a means of disposing of their by-products and not primarily to market briquets. The United Gas Improvement Company purchased and installed in 1905 a rotary press manufactured by the Societe Nouvelle des Etablissements de L'Horme et de Le Buire, Lyon, France, and are making an eggette weighing 5 ounces. As the plant now stands they have the original press and one of this type adapted to American conditions, making a pillow-shaped briquet weighing 2 ounces. The presses have a capacity of 5 tons

per hour. Anthracite buckwheat and smaller sizes are made with 10% water gas pitch into briquets used exclusively for making water gas, and giving better results than the larger sizes of anthracite.

The Solvay plant has passed through a longer experimental period beginning in 1904 with the installation of a Johnson press similar to that used at the St. Louis plant of the government. This press originally made 8-pound prismatic briquets; the dies were changed to make briquets weighing 4 ounces, but the troubles incident to feeding the dies and the reduced output led the company to abandon that press and substitute one built by Mr. Mashek, which did not prove satisfactory. The company has recently installed a press similar to the one at Point Breeze, made under the U. G. I. specifications, but making 2-ounce eggettes. These briquets contain coke breeze, Pocahontas slack and 8% hard pitch made from coke oven tar, and the company is now experimenting with a process to eliminate the smoke by partially coking the briquets.

The Briquette Coal Company had an experimental plant on Staten Island. A Couffinhal type of press, built by Schuchtermann & Kremer, Dortmund, Germany, making 4 tons per hour of 1½-pound rectilinear briquets, was installed together with a Belgian press made by H. Stevens of Charleroi, making 5-ounce eggettes at about 7 tons per hour. The plant was never designed to operate commercially and has recently been abandoned. The equipment is being installed in a plant near the mines at Murphysboro, Ill., to make briquets under contract with the St. Louis and Big Muddy Coal & Iron Company.

The work of the United States Geological Survey at St. Louis is more or less familiar to all and need only be mentioned here. During the exposition period a Johnson press made at Leeds, England, was installed, together with the other equipment to make up a complete briquetting plant. This press made 8-pound briquets and had a capacity of 7 to 8 tons per hour. A White press of the Belgian or Loiseau roll type was also installed, but returned to the owners at the close of the exposition. After the writer was placed in charge of the plant, March, 1905, the die plate of the Johnson press, shown in Fig. 2, was reduced to one-half its original thickness and other improvements were made in order to briquet larger samples of coal, such as were subsequently used in the locomotive road tests discussed further on. In rebuilding the plant in February, 1906, the first operating press of the Renfrow Briquette Machine Co. of St. Louis was installed, making a briquet weighing approximately 8 ounces at the rate of 6 to 7 tons per hour. While this press embodied all the fundamental principles of later presses, it could only be considered an experimental press, and briquets made were far from satisfactory. The same difficulties were experienced as may be found in the history of all briquetting presses in this country and abroad. Insufficient pressure frequently made soft briquets and required an excess of binder with a low melting point.

Profiting by this experience, the Renfrow Company built a new press having a capacity of 8 to 9 tons per hour, and making a briquet of the same shape weighing 13 ounces. This press was installed at the Norfolk plant of the Survey and made the briquets tested on the eastern railroads and for the Navy Department. Upon concluding the Norfolk tests the machine was sold to the Rock Island Coal Mining Company and installed by the writer at Hartshorne, Okla. (See Fig. 3). The plant has been operating since August, 1908, part of the time on double shift briquetting the bituminous slack mined by the company and marketing the product for domestic purposes in Oklahoma, Arkansas and Texas under the trade name of "Carbonets." This may be said to be the first plant in the middle west

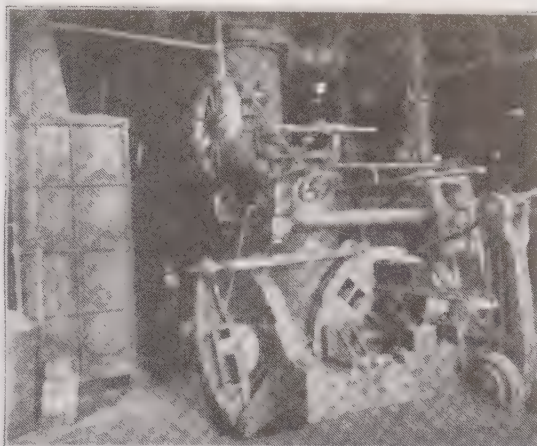


Fig. 2. Johnson press at Government Coal Testing Plant, St. Louis, Mo.

to be put on a successful commercial basis. The success of the undertaking is largely due to the careful consideration of the problems involved in the mechanical construction of the plant, the binder used and the market conditions encountered.

The Western Coalette Fuel Company of Kansas City, who used a Renfrow press, were unsuccessful because these problems were not given sufficient consideration. A still later press of the Renfrow Company has been installed by the Detroit Coalette Fuel Company to make briquets from Pocahontas coal for domestic purposes. The plant is just completed.

Kansas City will be supplied again this winter with briquets by the Standard Briquette Fuel Company of St. Louis; the plant was designed and is now being built at Kansas City by the Roberts and Schaefer Company of Chicago, using a Misner press. This press is of the plunger type, having a capacity of ten tons per hour. Arkansas semi-anthracite and hard coke oven pitch will be used. The briquets will be cylindrical with spherical ends and average 14 ounces in weight.

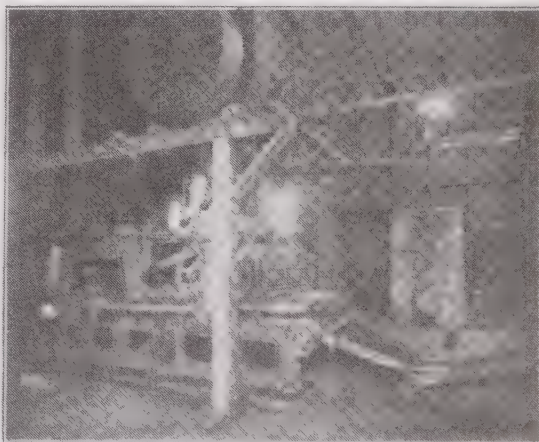


Fig. 3. Renfrow press making "Carbonets" at the briquetting plant of the Rock Island Coal Mining Co., Hartshorne, Okla.

Of the presses so far available, the maximum output has been about ten tons—with the possible exception of the Zwoyer press—in making briquets of 4 pounds and less in weight. If we eliminate the binder, the cost of production varies directly with the output. The speed of reciprocating press of the Couffinal type is fixed by the time required to move the die plate. Rotary presses, of the

tons per hour, and is capable of making briquets from 2 ounces to 20 pounds in weight by changing the dies.

No effort has been made in this article to discuss plants and briquets other than those using anthracite or bituminous coal.

An excellent study of the treatment of Texas lignites has been given by E. T. Dumble in a "Report on the Brown Coals and Lignite of Texas," in which he states the earliest efforts at briquetting were made by the Houston and Texas Central Railway in 1877. The International Compress Company, the American Lignite Briquette Company and the Eureka Briquette Company of Texas, have been exploiting the briquetting of lignite with binders, while the Washburn Lignite Coal Company and the Northwest Briquet Manufacturing Company of Minneapolis have been experimenting with the briquetting of lignite without a binder.

Manufacturing Process and Binders.

The briquets which we shall consider are made by pulverizing the coal, already of the proper dryness, adding a binder, mixing the mass thoroughly with the addition of sufficient steam to melt or moisten the binder and molding the agglomerate in specially constructed presses.

In the briquetting process, the most expensive item of cost is the binder, and every conceivable substance or mixture having bonding properties has been proposed for this purpose. Refuse containing starch and sugar, sulphite liquor, clay and lime are among the best known. Binders soluble in water must be water-proofed and dried before being handled, a process which is usually so expensive as to be prohibitive. The inorganic binders, except coal tar derivatives, are objectionable on account of the additional ash and clinker added to the fuel. Deodorants in the form of compounds of chlorine are recommended to overcome the odor from pitch and sulphur during combustion and to reduce smoke, but their value is doubtful. Compounds of manganese and other highly oxygenated compounds are recommended as smoke preventives, where coal tar pitch is the binder. But, except in special instances, pitch alone is used which is made from tar recovered as a by-product in the destructive distillation of coal, from by-product coke ovens, or in carburetting water gas for illuminating purposes.

Since the binder is of such importance, it is essential that the amount be reduced to a minimum and that it be thoroughly mixed with the coal. In American practice, the percentage of pitch required varies from 5 to 10%, according to the process used and the coal to be briquetted. An accuracy within one per cent, more or less, seems reasonable from a mechanical standpoint, but should 8% be the amount of binder used normally, it means 12%, more or less, in the cost which is of economic importance.

Briquetting Pitch.

In the fractional distillation of coal tar, a recovery of 65% pitch with 1.19 specific gravity is a fair average. On account of the varying demands for by-product coke oven tar in Europe, the quality is constantly changing at the different works. In this country the lack of uniform methods and the great variety of coals and oil used present the same difficulties in obtaining a uniform product. Briquetting pitch should be hard enough to be shipped in bulk in open cars and remain hard on the hottest days. To effect this all of the lighter oils and about 5% of the anthracene should be extracted. In Europe the pitch becomes soft at 75° and melts at from 100° to 120° C. As pitch has no real melting point, the methods used in fixing a melting point are arbitrary. Following the methods established by the Government, and in use here, practice has shown that a pitch with a melting point of 90° C. meets the general

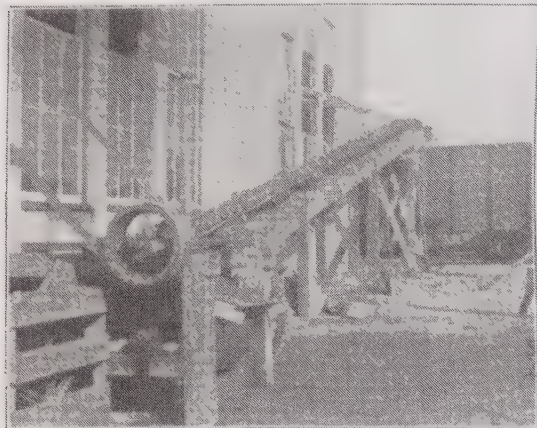


Fig. 4. Loading briquets direct from machine to car. Government Coal Testing Plant, Norfolk, Va. Briquets made from Pocahontas coal and tested on U. S. S. Connecticut.

Loiseau type, do not make satisfactory briquets larger than 5 or 6 ounces. Experience has shown that for railroad fuel made from bituminous coal, briquets of from 2 to 4 pounds each give best results. It is encouraging to learn that there is being tested, at an Illinois mine near St. Louis, a briquet machine which is a new departure from anything so far



Fig. 5. Another view of conveying belt shown in Fig. 4 showing how briquets can be loaded mechanically without breakage.

exploited in this country, bearing some relation to the one manufactured by Fland et Cie of Paris. The dies are filled with the same accuracy as in the Renfrow and other plunger presses, and the compression is made by the positive action of plungers with a straight line motion, but there are no reciprocating parts, and in consequence no lost motion. This press has a capacity of from 25 to 50

requirements. Pitch should also contain as little free carbon as possible, since this carbon or fine dust has not only no binding property in itself, but requires a bond to hold it together in the briquet. In the distillation of coal, carried on primarily for the manufacture of gas or coke, or both, the time factor in the process determines the character of the tar produced as a by-product. High heats "crack"

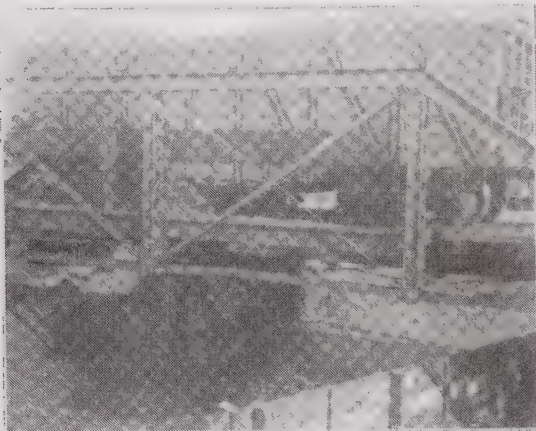


Fig. 6. Briquets being loaded on Government barge at Norfolk for test on U. S. S. Connecticut. This photograph was taken as hoppers were opened.

the higher hydrocarbons during the distillation, producing finely divided free carbon which remains in suspension in the tar. This condition is also maintained during the distillation of the tar in making pitch. Briquets made with the hard pitch usually sold in America today, are brittle and produce considerable slack in handling. If a softer grade



Fig. 7. View taken 30 seconds later than that shown in Fig. 6, showing rapidity with which this form of briquet can be discharged from hopped bottom cars and without breakage. It takes 20 minutes to unload lump coal from same cars.

is used, the briquets are smoky, and have a disastrous effect on the faces and hands of the workmen. To overcome these difficulties, experiments were carried on at the Stockton plant and a binder produced from California petroleum that was both hard and tough. The Barrett Manufacturing Company has for some time recognized the importance of a satisfactory "briquetting pitch" and is now prepared to

market a product following specifications already suggested by the writer.

Handling and Breakage.

One of the principal problems which confronts producers and users of coal, and particularly the railroads, is the deterioration of its fuel in handling and storing. Bituminous coal cannot be handled without breakage, which assumes a very considerable percentage even in well designed coaling stations. This is more noticeable in the friable, low volatile coals. English statistics show that with Welsh bunker coal the waste in handling is 2 to 3%, and the breakage 20 to 30%, which often reaches 50% in rough weather. The cohesion of briquets made in South Wales show 83%, against 40% for the same coal in lump form for which the breakage was .88% for briquets and 2.13% for coal. It has been observed by a mechanical engineer of a western railroad that the percentage of dust in handling briquets three times should not exceed 8%.

Figs. 4 and 5 show the manner of handling briquets direct from machine to car, and the absence of slack in the car is apparent. Fig. 6 shows a carload of briquets made from Pocahontas coal being delivered to a navy barge at Norfolk. Fig. 7 is from a photograph taken thirty seconds after the one shown in Fig. 6, and is further evidence of the small amount of breakage which we may expect from

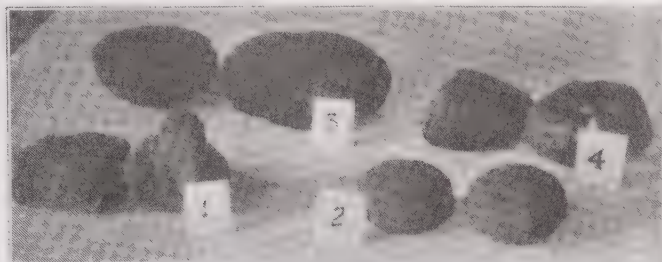


Fig. 8. Showing the relative cohesion of briquets, coke and lump coal, after having been subjected to the tumbler test.

- No. 1. West Virginia coke.
- No. 2. Round briquet made of Arkansas coal.
- No. 3. Square briquet made of Arkansas coal.
- No. 4. Southern Illinois lump coal.

well-made briquets. The drop from bottom of car to deck of barge is about 15 feet. These pictures further illustrate the rapidity with which this form of fuel may be handled in coaling stations. It requires about 20 minutes to unload a similar self-clearing car of coal at the Norfolk and Western coaling piers at Lambert's Point, an item of considerable importance in bunkering a ship.

In all locomotive tests, referred to later, where the briquets were reasonably well made, the breakage in handling was negligible; and the results of other tests made at the St. Louis plant bear out the European experience. The percentage of slack in handling was approximated by a series of experiments known as "drop tests," in which 50 pounds of briquets were three times dropped a distance of 6½ feet on a cast-iron plate, and the percentage of broken briquets recorded which was retained on a 1-inch square mesh wire screen. These results were used to check the tumbler tests, similar to those made in Europe to determine the cohesion of the briquet. Fig. 8 shows the relative cohesion of briquets, coke and lump coal after being subjected to the tumbler tests. It was found that the constant jarring of the fuel on locomotive tanks created considerable slack when the briquets were badly made. The tumbler tests approximated the results obtained in practice. If the briquets were well made, the cohesion was greater and the

erosion less than with the same coal in lump form. Breakage not only produces a poorer locomotive fuel but increases the losses due to wastage or otherwise unaccounted for.

Storage.

In countries where labor is cheap, large prismatic briquets are used because they can be easily stacked by hand, and occupy less bunker space. For this reason the French Navy specifies large briquets with an estimated bunker capacity of 51 pounds per cubic foot or 10% less than for coal. With the increased calorific value this is of supreme importance by increasing the steaming radius of the vessel. The British Admiralty reports 20% increased steaming radius. The briquets in this form, however, require twice as long to coal as with the raw fuel. In India and the West Indies 28-pound briquets are used because one constitutes a load for a native. It was shown at the government tests at Norfolk that as much as 20% increased space was required when prismatic briquets were loaded without stacking. Fig. 9 illustrates the reduced bunker capacity of briquets over that required for coal. This car originally contained a maximum load of coal, approximately one-half



Fig. 9. This car was originally full of coal, approximately one-half of which was taken out, briquetted with 6 per cent binder and returned to car. This illustration shows the reduced bunker capacity required by briquets.

of which was briquetted and returned to the car. The briquets made at the Hartshorne plant loaded to a capacity on gondola or dump cars will weigh within 10 to 15% as heavy as mine run coal, or about equal to egg size, as shown in Fig. 10. No difficulty was experienced in loading box cars to capacity plus 10%.

It has been observed that carefully executed tests in Europe show nearly 30% of the heating value of coal is lost when stored in open piles, while English naval records have mentioned that it required from 50 to 100% more stored coal to operate vessels than when freshly mined coal is used.

Experiments made in this country show that about 10% depreciation may be expected from coal stored in the open and that housing only helps the situation where the coals are high in sulphur.

Fig. 11 represents samples of briquets taken from open storage piles at the Government Fuel Testing Plant, St. Louis, after three years' exposure. In each sample a briquet was taken from surface and interior of pile to show effect of weathering. In samples 108, 110, 118, 120 and 128 the briquets were made with coal tar pitch binder. These bri-

quets were made on the Johnson press during 1904 and weigh 8 pounds. Analyses of these samples show practically no loss in calorific value. In Fig. 12 one of the outer briquets was broken to show the character of the fracture. These briquets show no deterioration after three months' storage in open pile. The briquets shown in Fig. 13 were made from a high sulphur coal that cannot be stored without igniting from spontaneous combustion, particularly if exposed to the weather.

Mr. W. H. V. Rosing, mechanical engineer of the Missouri Pacific Railway, states that "it is our practice to store coal during the summer months when the coal cars on the system are not being fully utilized, and use coal from storage piles later in the season when all the cars are required for commercial use. In this manner several hundred thousand tons are stored annually. During the summer of 1907 we lost 14,400 tons of coal by spontaneous combustion alone, which amounted to 8½% of the total stored. In fact we can only store coal from certain mines on the system, and this must be stored in a certain manner to avoid loss by spontaneous combustion. With the briquetted fuel we could store coal from any of the mines without danger of spontaneous combustion, without deterioration or loss of volatile combustibles which occurs on the surface of the ordinary coal piles."

Mr. A. W. Gibbs, G. S. M. P., Pennsylvania Railroad, makes the following statement in his report of briquet tests at Altoona:

"To observe the effect on briquets of exposure to the weather, a number of the round and square briquets were placed on the roof of the testing plant. After four months of exposure for the round and three months for the square briquets no change whatever from their original condition was noticed. They appeared to be entirely impervious to moisture and were still firm and hard.

"The briquets were little affected by handling. They were loaded at St. Louis in open gondola cars and shipped to Altoona, where they were unloaded by hand and stacked. They were handled a third time in taking them to the firing platform of the test locomotive. After these three handlings they were still in good condition, very few broken, and the amount of dust and small particles was practically negligible."

Briquets Used on European Railroads.

Practically all of the European railroads use briquets and the quantity varies from 15 to 40% of the total coal consumed. The briquets for railway and steamship use are prismatic in shape. The French navy specifies 22-pound briquets. These briquets are broken before firing, and if well made will break into pieces without making dust. The railroads use briquets not to exceed 11 pounds in weight, which are fired one or more at a time by hand. Storage fuel is usually in the form of briquets; they are carried on the tanks along with coal and generally used to get up steam, to make up time, or other heavy grades during the run.

The specifications to contractors furnishing briquets to the state railroads on the continent are very rigid, particularly in France. These specifications vary somewhat in the different countries but are covered generally by the following items:

1st. Briquets shall be well made, sonorous, entire, with sharp edges, breaking with a clean cut, brilliant and homogeneous fracture.

2d. Their cohesion shall be not less than 55% and they shall not soften at 50° C.

3d. The briquets shall ignite easily without causing dense black smoke, shall burn with a quick bright flame and be consumed without disintegrating. The slag or clinker shall not adhere to the grates or tube sheets.

4th. The briquets shall not be hygroscopic nor contain more than 4% moisture. They shall contain between 15 and 22% volatile combustible, and not more than 11% ash. The coal shall have been freshly mined and free from sulphur.

5th. Coal tar pitch is the only binder specified; it must be practically odorless and limited to 10%.

6th. The briquets must be prismatic with a square base; when specified they are from 3 to 11 pounds in weight, according to kind of coal used, with a density of from 1.13 to 1.21.

Work of Government Plant at St. Louis.

During 1905, 1906, and 1907, over one hundred tests* were conducted by the government on eastern and western railroads to establish the relative value of briquetted and

raw coal for locomotive use. Seventy road tests were made on the Burlington, Rock Island, Missouri Pacific and Chicago & Eastern Illinois Railways, and twenty tests at the Altoona laboratory of the Pennsylvania Railroad, under the direction of the writer, assisted by G. E. Ryder and Ralph Galt. The co-operation of all the railroad officials was secured so that these tests would be of value to them in comparison with other locomotive fuel tests. An abridgment of Mr. E. D. Nelson's report on the Pennsylvania laboratory tests has been published in Bulletin No. 363 of the Survey.

The briquets were made at the Fuel Testing Plant at St. Louis, and the details of manufacture have already been reported in Bulletin No. 332 of the U. S. Geological Survey. The object of the road tests was to discover, if possible, the problems to be encountered in the use of briquets in actual practice and wherein this practice was affected by good or faulty manufacture of the fuel. It must be remembered that the best efforts at the St. Louis plant could not produce uniformly satisfactory briquets. The English machine was designed to meet European requirement and the American machine was in an experimental stage and made at best a product of varying quality. The problems involved in the manufacture of briquets from our coals have been already reported. It is one object of this paper to show their value for railroad use.

Locomotive Road Tests.

The first locomotive tests were made during the autumn of 1905 on locomotives of the Missouri Pacific Railroad between St. Louis and Sedalia, after having tested the burning quality of the briquets in stationary locomotive boilers. The briquets were made on the Johnson machine from Arkansas semi-anthracite slack, and were tested in comparison with the Illinois lump coal regularly furnished for that division. The results given in a report by W. H. V. Rosing indicate an increased evaporation of 23% and a decreased consumption of fuel per 1,000 ton miles of 37% in favor of the briquets. The briquets were broken in halves on this test which created about 20% slack.

About this time, the New York Central Lines became interested in the use of briquetted coke breeze, and burned some briquets made at the plant on the same machine. These briquets were tested in freight and switching service by the Lake Shore Railroad near Cleveland. The report of Mr. H. F. Ball, Superintendent of Motive Power, indicates that the briquets were not satisfactory for heavy service, but had some advantages for switching, owing to the entire absence of black or gray smoke and very few cinders. The briquets were hard to ignite, which, added to the high ash content of the coke, and the size of the briquets, made it difficult to maintain a good fire.

Briquets made from mixtures of gas-house coke and Illinois screenings were tested in switching service by the Missouri Pacific Railroad at St. Louis. The briquets gave better results than the ones made from coke oven breeze. Even with those containing 50% coal, however, there was always an interval of time directly after firing when the steam pressure would fall. If the engine was working this was objectionable. No smoke was discernible even when the blower was shut off.

In June, 1906, the Rock Island Railroad became interested in the use of briquets and 100 tons of Hartshorne, I. T., slack were briquetted and shipped to Chicago for test. The report of C. A. Seley compared these results with Illinois lump coal used in freight service and indicated an average in the coal consumption of 26.6% in favor of briquets. The observer's notes on these tests state that "the briquets did not 'honeycomb' the tube sheets sufficiently



Fig. 10. Carload of "Carbonets" at Hartshorne, Okla.

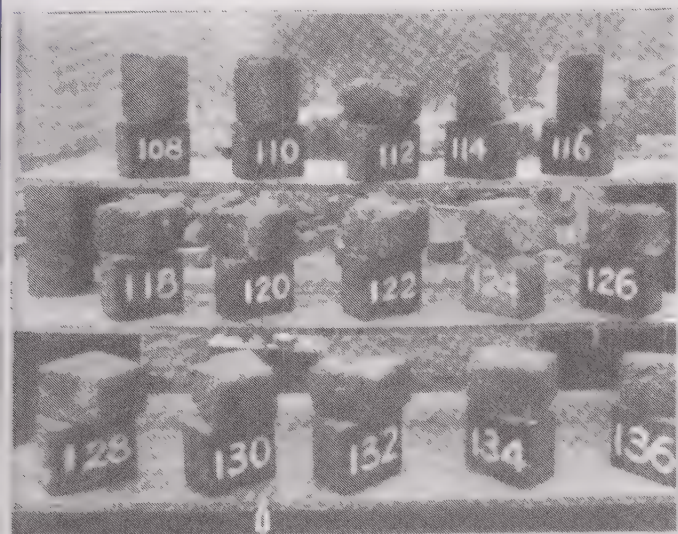


Fig. 11. Samples of briquets taken from open storage piles at the Government Fuel Testing Plant, St. Louis, after 3 years' exposure. In each sample one briquet was taken from surface and interior of pile to show effect of weathering. In sample 108, 110, 118, 120 and 128 the briquets were made with coal tar pitch binder. These briquets were made on the Johnson press during 1904 and weigh 8 pounds.

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Fig. 12. Briquets made from Pennsylvania coal after three months' open storage. The broken briquets show the character of fracture.



Fig. 13. Briquets made from raw Kansas slack after three months' storage in the open during the winter. This slack is high in sulphur and cannot be stored without "firing."



Fig. 14. Shows two suburban trains on the Rock Island passing each other in the yards north of Englewood. The southbound train is burning briquets.

to give any trouble and this slag was not as hard to remove as with Illinois coal. The ashes from the briquets did not clinker. The nozzle could be increased $\frac{1}{4}$ inch and still produce a sufficient draft. This fuel burns with an intense heat, much like coke, and the depth of the fire is easily regulated. On arriving at Joliet, an inspection showed fire next to the grate which would not be the case with coal. A slight puff of black smoke appeared only when briquets were fired; this almost immediately disappeared—a desirable feature for suburban service."

Fig. 14 shows two suburban trains on the Chicago, Rock Island and Pacific Railway passing each other in the yards north of Englewood. They are both running at full speed. The southbound train is burning briquets.

Fig. 15 illustrates the characteristic puff of smoke which appears directly after firing briquets and last three to five seconds; engine is on Chicago, Rock Island & Pacific suburban service approaching Morgan Park at full speed. Fig. 16 shows engine standing at Walden, blower off; and Fig. 17 shows engine approaching Tracy at full speed.

The general interest awakened by these preliminary tests warranted the government in making more extensive records, and the co-operation of the Rock Island, Missouri Pacific, Burlington and Chicago & Eastern Illinois Railroads was sought to this end. The samples varying in weight from 100 to 400 tons, were shipped to St. Louis and briquetted on the English and Renfrow machine in about equal amounts, using from 6 to 9% of water gas pitch binder. The briquets were consigned to the railroad and loaded through its coal chutes in the usual manner in which coal is handled. Where the briquets were soft, care was taken to handle them with coke forks in weighing onto the tender. The water tanks were calibrated and the water measured as used. Flue gas analyses and front end and furnace temperatures were taken during the run. Careful selected samples of fuel, ash and cinders were shipped to St. Louis and analyzed. Steam pressure, feed water temperature, leakage, smoke condition and thickness of fuel bed, method of firing and draft were recorded. The same engine, and, as nearly as possible, the same crew were furnished by the railroad for all tests on that road. At the end of the run the condition of the engine was noted, and the test written up.

Comparative tests were made on lump coal from the same mine as the slack shipped from Oklahoma, Kansas and Missouri. A condensed summary of the results of these tests is given below. A record of tests on Carterville lump and mine run coal made by the Burlington Railroad is included for comparison with the tests of briquetted slack from the same district.

The foregoing report is condensed from a data sheet in which a total of 122 observed and calculated items made up the record of each test. Averages of all tests made on each kind of fuel are given, as for obvious reasons it is desirable to abridge the report. Noting the equivalent evaporation per pound of fuel as fired, it will be observed that in nearly all cases the rate is in favor of briquets.

In the case of the tests of Illinois coal on the Burlington Railroad, all of the fuels are from different mines and are therefore of comparative value only when their cost is taken into account. Tests of Illinois coal on the Missouri

LOCOMOTIVE ROAD TESTS SHOWING COMPARATIVE VALUES OF BRIQUETTED AND RAW COAL.

RAILROAD.....	C., B. & Q. R. R.				C., R. I. & P. R. Y.		MISSOURI PACIFIC RY.		C. & E. I. R. R.		C., B. & Q. R. R.	
COAL SHIPPED FOR TEST.....	CARTERVILLE DISTRICT, ILL.				HARTSHORNE, OKLAHOMA		PITTSBURG, KANSAS		SULLIVAN CO., INDIANA		BEVIER, MISSOURI	
FUEL TESTED.....	BRIQUETS		COAL		BRIQUETS		COAL		BRIQUETS		COAL	
	Washed Ill. 28A	Un-washed Ill. 28B	8" Lump	Mine Run	Un-washed I. T. 2B	Lump I. T. 2C	Washed Kan. 2B	Un-washed Kan. 2C	Lump Kan. 7	Ind. 1B 6B 6B	Mine Run Ind. 1B 6B	Mo. 10 1" Lump
Proximate Analyses	Moisture.....	5.67	5.41	5.59	4.70	2.1	2.54	3.44	2.49	5.47	7.14	13.86
Fuel as fired	Volatile Combustible.....	31.09	31.86	32.67	35.04	35.65	36.98	33.21	31.15	29.15	36.02	32.15
	Fixed Carbon.....	60.75	61.28	62.80	47.14	50.74	53.97	62.45	47.33	49.81	44.18	41.90
	Ash.....	12.49	11.35	8.94	13.12	11.61	6.31	10.9	18.03	15.57	12.66	12.08
	Sulphur.....	1.11	1.87			1.63	1.75	3.67	4.43	4.8	3.63	3.48
B. T. U. per pound fuel as fired.....		11969	12163			13015	13681	13033	11713	11422	11711	10553
Fuel consumed per sq. ft., G. S. per hour actual.....		73.7	73.2	80.9	85.7	44.3	55.2	75.	75.2	92.1	48.	53.
Water evaporated per pound fuel	Apparent	7.25	6.95	7.56	6.86	7.60	7.07	7.22	7.4	5.94	6.01	5.60
	Equivalent	6.66	6.38	6.99	6.15	6.00	6.34	6.64	6.89	7.13	7.25	6.77
	Actual Dry Fuel	9.09	8.86	9.52	8.56	9.20	8.56	9.13	9.12	7.54	7.79	7.86
Equivalent evaporation per sq. ft., H. S., per hour.....		9.97	9.94	11.60	11.20	6.96	8.02	9.49	9.97	9.42	6.56	6.8
Boiler horsepower developed.....		792	780	912	873	322	599	813	854	809	489	485
Boiler efficiency.....		89.5	86.5			66.8	58.7	65.5	75.8	60.2	59.6	62.4

Pacific Railroad are omitted because of no comparative tests on lump coal. The Burlington tests with Missouri coal show practically the same results with briquets and lump coal, while the Indiana coals offer the same problems in briquetting and show the same characteristics in burning as Illinois coals.

The most representative tests, and therefore the most accurate expression of what may be accomplished with well made briquets, are the tests made on the Rock Island and Missouri Pacific Railroad with Oklahoma and Kansas coals. The Rock Island tests show an increase equivalent evaporation of 8% and increased boiler efficiency of about 15%, while the Kansas briquets show 25% increased evaporation and boiler efficiency over lump coal. The causes to which may be attributed the variation in results of the various fuels tested are discussed further on.

Altoona Laboratory Tests.

In a testing plant, such as is maintained by the Pennsylvania Railroad at Altoona, careful regulation and accurate comparative data are obtainable under varying conditions of engine and boiler performance. This data is valuable in

affording results which may be at least approximated under the best road conditions in practice. The fact that they compare favorably with the road tests is encouraging. The briquets used were manufactured at the St. Louis plant from a low volatile high grade friable coal in the form of mine run, mined in Cambria county, Pennsylvania. About equal proportions of square and round briquets were made with 5, 6, 7 and 8% water gas pitch binder. The same coal in mine run form was shipped to the Altoona plant for comparative tests. As this coal is used by the Pennsylvania Railroad, its characteristics as a locomotive fuel were well known. The principal objection to its use was the large percentage of fuel lost through the stack as fine coke, which amounted to as much as 23% when operating under heavy load. To this may be added the front end cinder, which greatly obstructed the draft. The coal produces less smoke than other coals used on the system and this feature made it a valuable fuel for fast passenger and terminal service. The object of these tests was to determine what effect briquetting would have on these characteristics, and in addition, on boiler efficiency and capacity. Tests were made at

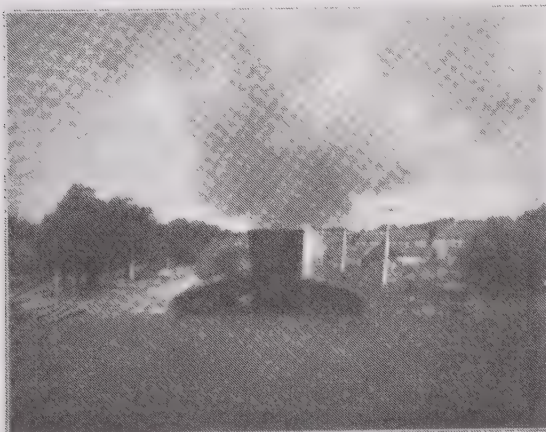


Fig. 15. Illustrates the characteristic puff of smoke lasting 3 to 5 seconds which appears directly after firing.



Fig. 16. Shows Rock Island suburban engine standing at Walden with blower shut off.



Fig 17. Shows engine of same train approaching Tracy at full speed.

4 or 5 rates of combustion for each kind of briquet and the mine run coal, starting with 30 pounds of coal per square foot of grate surface per hour and running to the maximum capacity of the boiler. The maximum rate with coal was 102 pounds, against 127 pounds for briquets, an increase of 25%.

The comparison of coal and briquets at equal rates of combustion shows an average increase in boiler efficiency of about 15% and an increased equivalent evaporation of 20% in favor of briquets for the different rates compared:

Evaporation per square foot of Heating Surface per hour.	Equivalent Evaporation per pound of fuel.	
	Raw Coal.	Briquets.
8 pounds	9.5 pounds	10.7 pounds
10 pounds	8.8 pounds	10.2 pounds
12 pounds	8.0 pounds	8.7 pounds
14 pounds	7.3 pounds	9.2 pounds
16 pounds	6.6 pounds	8.7 pounds

In comparing the coal consumed per dynamometer horsepower per hour, with the total power developed, the record showed a difference of nearly 35% in favor of the briquets, when the engine was working most efficiently. This figure compares favorably with data obtained from road tests on the coal consumption per ton mile.

Smoke readings were taken at stated periods during each test and the density stated in terms of Ringlemann's charts. Based on 5 as representing very black smoke, the average of all readings for coal was 1.5, for round briquets 0.9 and for square briquets 0.6, or in other words the coal made twice as much smoke as the briquets. Fig. 18 shows a series of photographs of the stack at Altoona, taken every 5 minutes during the test. The average smoke record for this test was 0.3.

Importance of Physical Characteristics of Fuel.

When a sample of coal is burned in a calorimeter, all of the combustible is consumed and the total heat value of the fuel is given in British Thermal Units. In practice this result can only be approximated, since there will always be a loss in the stack gases, by radiation and in the fuel left unburned in the refuse. The efficiency of the furnace as a heat producer and of the boilers as a heat absorber play an important part. The real value to the consumer is the evaporation possible in actual practice. The purchase of coal on a B. T. U. basis is an improvement over the old method that "coal was coal" and the lowest price made the cheapest fuel. The physical character of the coal as delivered on the locomotive tank and its behavior in the fire

during all conditions met with on the road is often of more importance than its theoretical heat value. An official of the Pennsylvania Railroad once told the writer that his company could afford to pay the same price for a certain coal of higher ash content and consequent lower heating value than for a much cleaner and theoretically superior coal, because the poorer coal made an ash which did not clinker and was easily shaken through the grates.

Combustion.

Coal will burn only where there is sufficient air in the presence of an ignition temperature; and the rate of combustion is usually limited by the air supply and the ability to mix it with the gases from the coal. When a lump of coal burns, the tendency is for the gases to pass off through the lines of least resistance, that is, from the crevices made in the coal as it breaks up in the fire. In the case of briquets there is no tendency to do this, owing to their homogeneous and porous structure.

If we examine a briquet in the process of burning, as in Fig. 19, we find that it burns entirely from the outside. As the volatile combustion is driven off, a layer of coke is formed which burns to ash and falls off or is carried away by the draft. Thus we find successive layers showing partial combustion of the fuel while the inner part is unaffected, and the briquet retains its identity as such until entirely consumed.

The density of the briquet is of prime importance. Harder briquets do not break up so easily and they burn more slowly in the fire. By this means the volatile combustible is driven off more nearly at the rate at which it can be burned with greatest economy, and the briquets form coke during the process of combustion even though made with an otherwise non-coking coal. This is more essential with high volatile than with high carbon coals.

With the harder high volatile coals of Illinois, the tendency of the lump coal to break up in the fire is less than with the more friable low volatile coals of the Appalachian field. The eastern coals also produce much more slack in handling so that the main objection to their use as a railroad fuel is the percentage lost through the stack and the coking of the coal in a mass in the firebox. The Arkansas and Oklahoma coals have similar characteristics. With well made briquets from these good coking coals, the briquets coke separately and do not run together in the fire. It was thought necessary to break the Arkansas four-pound briquets before firing, but the same briquets made from Hartshorne and Loydell coals were fired whole and burned with good results. The eight-ounce briquets did not give as loose a fire and could not be fired with such a heavy bed when made from Illinois coal. It must be observed in this connection, however, that the more friable coals can be made into better briquets with less pressure than the other coals tested. The whole value of the briquet is due to its uniform size and freedom from slack in handling. These statements are borne out in the tests of Illinois and Missouri coals, where the lump coal did not break up badly in handling, while the briquets used on these tests produced at least 15% slack, which was naturally very fine; a considerable portion being lost through the stack. The fuel could not be "wet down" as uniform conditions had to be maintained for test purposes. These coals do not readily coke so that while a poorly made briquet would hold together, if made from the eastern coal, it would tend to disintegrate when made from these coals. It was therefore necessary to fire with a thin bed as the fine coal would cause heavy clink to form and cut off this draft when a thick fire was carried. It was the usual experience that the briquets made no objectionable clinker and the ash was finely divided and easily shaken through the grates. This is to be expected from the manner in which the coal is prepared before

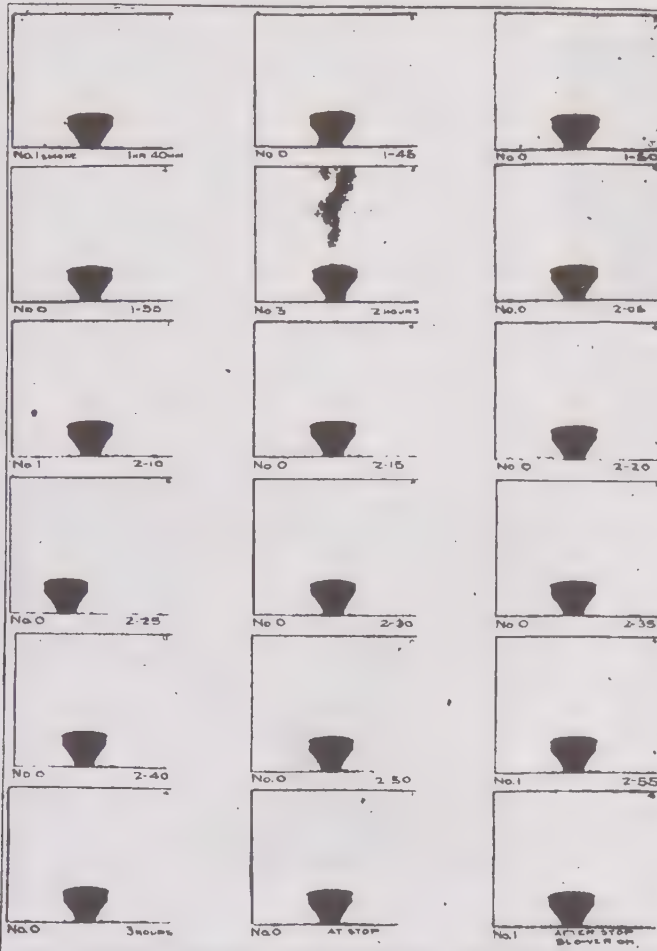


Fig. 18. Smoke observations taken every 5 minutes during test of briquets at testing laboratory of Pennsylvania R. R. at Altoona.

briquetting, and from the uniform distribution of the slag producing elements of the ash, such as iron pyrites, throughout the briquet.

The reduction in cinders and sparks by briquetting depends on the quality of the coal as well as the density of the briquets. Certain coals, like the Loydell coal, produce a fine scale of coke in burning which is often loosened from the surface of the briquet by the action of the draft and carried partially burnt through the stack. With the Hartshorne and Arkansas coals the coking is much different in character, probably due to the higher ash content, and these coke scales are scarcely noticeable. The same difference was noticed in burning briquets made from Pocahontas coal and "bone coal" picked from the mine run coal. The latter was high in ash and the scales were greatly reduced.

The results at Altoona show no appreciable reduction in the weight of cinders from briquets, but a decided reduction in their calorific value.

During December, 1907, a test of briquets was made on the U. S. S. Connecticut between New York and Hampton Roads. The results were so encouraging that more briquets were ordered by the Navy Department for test during the trip of the fleet around the world. Figs. 22 and

23 are from photographs taken by the writer as the ships passed out the Capes and illustrate the relative smoke producing qualities of raw and briquetted coal. Various samples of Pocahontas and New River coals were briquetted and tested for burning qualities on tug boats in Hampton Roads. The boilers were fired at intervals of five minutes, known as "firing periods," and as nearly as possible the same furnace conditions and service were maintained throughout the test. Photographs were taken every fifteen seconds covering a firing period and one series taken an hour while smoke readings were taken every fifteen seconds throughout the test. Figs. 20 and 21 illustrate the densest smoke observed for similar tests of briquetted and raw coal.

Firing.

The work of the fireman is reduced by the use of briquets. Their uniform size makes the handling easier; it is easier to keep up steam and only necessary to fill up the holes in the fire without leveling. No slicing is necessary as is usual with eastern coals. The comparative absence of clinker, when briquets are properly fired, is a big advantage in forcing the boiler for heavy grades or higher speed.

Advantages of Briquetted Over Raw Coal.

In general the following advantages may be claimed for briquets made from bituminous coal over the same coal not briquetted:

1. Comparative absence of smoke.
2. Uniformity of size and quality.
3. Less loss of fuel in ash.
4. Increased furnace and boiler efficiency.
5. Reduced consumption of fuel per ton mile.
6. More fuel can be burned per square foot of heating surface, hence greater capacity.
7. Less slack in handling fuel.
8. Less clinker and cinders.
9. Longer life of grates.
10. Fires can be kept up for longer periods without cleaning.
11. Less cleaning of tubes.
12. Less labor in firing, hence
13. Greater efficiency of fireman.
14. Less draft needed.
15. More uniform steam pressure.
16. Steam pressure can be increased more rapidly.
17. No liability to spontaneous combustion.
18. Availability for storage without deterioration.

Mr. Malcolmson: I received several letters which I should like to present. I tried for some time to get information concerning the use of briquets on the D., L. & W. Ry. Briquets have been used on their railroad for the past few years, but it has been difficult to get information as to what has been done and after several unsuccessful attempts, through the courtesy of Mr. Blauvelt, I was able to get a record of tests of the briquets which they are now burning in their locomotives. I will read this report:

"Office of Superintendent of Motive Power and Equipment,
D., L. & W. R. R. Co.

Scranton, Pa., July 24, 1907.

"Mr. E. E. Loomis, Vice-President, New York, N. Y.

"Dear Sir: Relative to attached, I submit herewith a description of the anthracite briquets as used on our locomotives; also the results of various road tests made with this fuel.



Fig. 19. Briquets made from Hartshorne, Okla., coal showing various stages of combustion. The smaller briquets were made on Ren-frow press and weighs 8 oz. each. The larger briquets were made on Johnson press and weigh 4 lbs. each. No. 8 shows the interior of the briquet intact, and outside layer of coke. The depth of the coking is shown in No. 7. In No. 9 the briquet has been reduced nearly to ash. The briquets swell slightly in burning and their efficiency is largely due to the uniformity with which the gases are delivered from the surface of the briquet, and mix with the air.

Description.

"The anthracite briquets used in our locomotives are manufactured by the Scranton Anthracite Briquette Company. The plant is adjacent to the Storrs Coal Breaker and Washery. The anthracite used in the manufacture of the fuel is the refuse from the washery, which is ordinarily flushed back into worked out chambers of the mines. It is in small particles about the size of coarse sand. It is conveyed by water from the washery into a settling tank from which it is elevated by buckets to a moving table 1,000

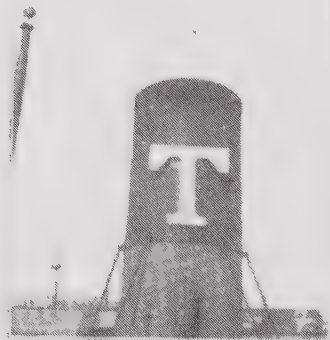


Fig. 20. Burning briquets made from Pocahontas coal on tugboat running under full speed in harbor at Norfolk. Photograph taken at time of firing.

feet long. While on this carrier or table the water drains off and fuel is next conveyed by a belt to a large cylindrical dryer where moisture is evaporated and coal heated to a high temperature. The fuel is now run into mixers where the fine coal and pitch are thoroughly amalgamated. The mixture is next conveyed to the briquetting machine. This machine consists principally of four metal wheels about 4 feet diameter, 8-inch face, with cavities on periphery which correspond to the shape of the briquets. A pair of these wheels are on each side of machine, and are so geared that the cavities on one wheel coincide with those on the other.

The mixture is fed above by a hopper and as the wheels revolve the briquets are rolled out and drop onto a moving carrier, which allows the refuse to pass through and carries only the fully formed briquet away. The briquets are next cooled by a system of slow moving carriers, after which they are conveyed to storage bins.

"The briquets are oval in shape in their longitudinal and transverse sections. The first ones tested were $3\frac{1}{2}$ inches long, $2\frac{1}{2}$ inches wide and 2 inches thick, and weighed $5\frac{1}{4}$ ounces each.

"A new machine has been installed and briquets reduced in size, dimensions being 3 inches long, 2 inches wide and $1\frac{3}{4}$ inches thick, weight $3\frac{5}{8}$ ounces. The smaller briquets give the best results.

"The briquets are tough, of smooth exterior surface (except at fins) and under ordinary handling do not break.

Road Test of Briquets.

"The first test was conducted in freight service on a standard consolidation engine designed to burn bituminous coal with firebox of the semi-wide type, equipped with shaking grates. Four return trips were made between Scranton and Elmira with large briquet fuel.



Fig. 21. Another view of tug shown in Fig. 20 burning Pocahontas coal, under similar conditions. Photographs were taken every 15 seconds for five minutes to cover a "firing period," and these photographs illustrate the densest smoke observed.

and to obtain comparable data four return trips were made with bituminous fuel. The briquet fuel was of the larger size noted above.



Fig. 22. Fleet passing out the Capes, Dec. 16, 1907. U. S. S. Connecticut burning briquets.

"A chemical analysis of the two fuels tested is as follows:

	Briquets	Bituminous
Ash	13.7	11.0
Moisture	1.3	.5
Volatile matter	7.5	21.06
Fixed carbon	11.5	67.44
B. T. U. per lb. of coal	13,690	14,282

"The analysis shows the bituminous coal of very high calorific value. An average of 20 Pennsylvania samples gives an average of 12,985 B. T. U. The bituminous coal

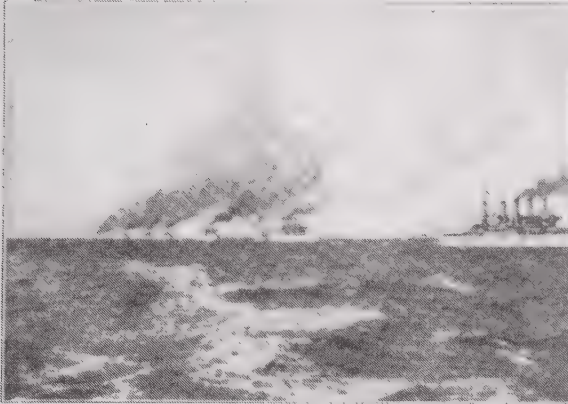


Fig. 23. Remainder of fleet burning coal. All of the ships were well under way and boilers working under similar conditions.

used on test is of 10% greater calorific value than the average of coals noted, and 4.32% more than briquet coal.

"The briquet coal (13,690 B. T. U.) has 5.4% greater calorific value than the average of bituminous coals noted. These comparisons are made so that results to follow can be judged on an equitable basis.

	Briquets	Bituminous
Coal consumed per trip, lbs.	24,233	19,175
Water used per trip, lbs.	144,435	145,625
Average boiler steam pressure....	194.1	190.1
Equiv. evaporation from and at 212 degrees	6.87	9.12
Ashes, per cent	3.6	6.08
Coal consumed per 1,000 ton miles, lbs.	106.4	99.89
Lbs. per sq. ft. grate area per hour	69.22	57.89
Av. speed for actual running time, M. P. H.	18.05	17.68
Average actual running time....	6 h. 59 m.	6 h. 41 m.
Average time on road per trip....	10 h. 41 m.	10 h. 52 m.

"It was found that when using briquet fuel the double exhaust nozzle had to be increased in diameter $\frac{3}{8}$ inch. This resulted in an increase of average M. E. P. of about 4%.

"It was noted also on this test that the use of fire tools was eliminated with briquet fuel and use of shaking grates was limited to operation on each descending grade. Considering that firemen had no previous experience with this fuel and the benefits derived from increased nozzle diameters, this test was considered as favorable to use of briquet fuel.

"Subsequent tests were made with both large and small size briquet coal compared with anthracite pea coal on a 10-wheel, wide firebox, passenger engine between Scranton and Hoboken. The following is a summary of results obtained:

Kind of fuel.	Average				
	Lbs. of coal.	Lbs. of water.	Steam pres.	Evapo-ration.	Nozzle diam. No. of cars.
Small briquets	29,400	204,540	189	8.24	3 13/16 7
Large briquets	32,056	202,970	182	7.58	3 7/8 7
Pea coal					

briquets .. 30,360 167,450 190 6.75 3 3/8 7
"Note increased efficiency of smaller size briquet fuel.

"A number of other tests were made, but those cited are representative of results obtained.

"In November, 1906, briquet coal was put into extensive use on narrow firebox type of switch and pusher engines at various points on the road. The average consumption being about 200 tons per day, or a total of 20,000 tons to date.

"This fuel has proven satisfactory for locomotive service due to its free steaming qualities and reduction of labor in manipulation of the fire. While not as objectionable as when bituminous coal is used, the smoke and dust from briquet fuel renders it unsuitable for passenger service on this road. When a considerable quantity of dust is present, mixed with briquets, the firemen complain as to the effect of dust on their eyes and faces. Extensive alterations at the briquet plant are being made with the view of eliminating all dust and small matter.

"That these anthracite briquets have proven a satisfactory stationary boiler and locomotive fuel has been thoroughly demonstrated, and the improvements now being made at the plant will enhance its value. Yours truly,

"R. G. KILPATRICK."

National Railways of Mexico.

Mr. Malcolmson: I have also a letter from the National Railways of Mexico, where they have been using briquets for twenty-five years, which I will read:

"Ferrocarriles Nacionales de Mexico.

Mexico, Mexico, June 2, 1909.

"Roberts & Schaefer Company,

"Old Colony Bldg., Chicago, Illinois.

"Dear Sirs: Answering your letter of May 25th, I beg to advise that our experience with briquets has been the Crown Patent Fuel from England. The briquets are cubical, weighing 25 pounds. These briquets are at their best when kept about nine months. They will not stand indefinite storing. They were burned exclusively on locomotives.

"The price of briquets as compared with West Virginia Fairmont coal, screened over $1\frac{1}{2}$ -inch, was about 30% higher.

"The briquet shows an execution of 14% greater than Fairmont coal, and on account of this difference we canceled the contract for briquets in July, 1905, and have not since used the briquets.

"The briquets in question had to be broken up in order to properly fire the locomotives, were a bit high in sulphur and hard on flues and fireboxes.

"The ordinary round briquets have not been used by locomotives or National Railways of Mexico.

"The cause of the trouble with flues was added to by amount of gas generated when first fired.

"One advantage of the briquet was the convenience of loading and unloading in stock and box cars. A box or stock car could be loaded with block fuel for one-half the cost of loading or unloading same car with coal.

"Yours truly,

H. M. TAYLOR."

Mr. Blauvelt of the Semet-Solvay.

The President: We have with us Mr. W. H. Blauvelt, of the Semet-Solvay Company. We will be glad if Mr. Blauvelt would open the discussion of the paper read by Mr. Malcolmson.

Mr. Blauvelt: I am glad to have this opportunity of saying a few words about briquetting, because the subject has interested me a great deal for a number of years. There are two or three things that I want to speak of to you railroad men, for, of course, the subject of briquetting has a good many sides. As far as its use on railroads is concerned, there are two or three points that I think will interest you. Of course, you know that as a rule briquets are of a certain shape and size, whereas ordinary coal bears all shapes, from as big as can be put into the tank, down to slack. When the coal is in the form of briquets it is always a certain size and the drafting and handling of the fuel in the firebox can be regulated exactly, while with ordinary coal there must be a change every time it changes from slack to lump, or vice versa.

But the greatest advantage of briquets as compared with ordinary fuel is found in those localities where very fine coals prevail. For example, in the Delaware & Lackawanna Company's tests referred to, the coals used for briquetting were the No. 3 Buckwheat or Birdseye, which is not a merchantable fuel. As was said in the letter which was read, these coals are ordinarily thrown away, but when made into briquets, they compare very favorably with the best pea coal used on the Delaware & Lackawanna and produce about one-fourth greater evaporation.

That is one illustration. Another case is in the Hocking districts where there are very large quantities of fine coal, not available, generally speaking, except by briquetting. A third case, and very much the more important, is in the western districts, where only the lump coal of the lignites, semi-lignites and dry, non-coking coals, is available for use in the locomotives, and a material deterioration takes place when stored and handled. The advantage which we have in the briquetting industry is this—we are able to take coals which are otherwise practically useless and by an expenditure for the purchase of a binder, and the manufacturing which of course varies under conditions from perhaps forty cents up to eighty or ninety cents per ton, depending on the location, we are able to make these otherwise useless coals into a locomotive fuel which compares in every case very favorably, and oftentimes exceeds in value the best locomotive coal that is obtainable in the locality.

Another thing, some of the western roads run through coal districts where they practically have to ignore the fact that there is coal at the side of the track and have to bring their locomotive fuel from a distance, because the qualities of the local coals are not such as to make them a practical locomotive fuel which will stand storage and handling, and go into the locomotive firebox in condition where it is available for steam-making purposes. This briquetting overcomes all those things. It is really purely a commercial question. We have on one side the cost of a binder and cost of manufacture, and on the other side the difference in the cost to the railroads of the locomotive coals that they would otherwise use. They can use coal by this method from their local supplies. I am just suggesting to you these points: I am not going into the details, because you can solve those for your own particular conditions better than I can. This is the bare skeleton of the situation, as far as the briquetting industry is related to the use of coal in locomotives.

The second point I want to bring out is the question of binder. As you all know, briquets are made either by grinding up the coal, or taking it already fine and pressing it in the various types of presses, having previously mixed it with binder or cement to make it stick together. There are a good many kinds of binder used, but practically there is only one binder, namely, coal tar pitch. The reason I make that broad assertion is, that although a great many binders have been developed, yet the experience in Belgium, Germany and France, where the briquet industry has as-

sumed large proportions, is that briquets, in order to be of commercial value, must not only be strong to resist handling, but must be waterproof, must be able to stand wetting and storing, and that means that they must have a tough, waterproof binder; this practically means coal tar pitch. The available supply of binder is another question of importance. The supply of tar pitch in this country is now considerably in excess of the demand, and although a reasonably rapid growth of the briquetting industry will largely increase the demand for pitch, yet there is no question that the supply will be ample. By-product ovens and gas works are growing rapidly in number, and certainly for a long time to come there will be no lack of pitch.

The third point that I want to touch on, and I will be as brief as possible, is the experience of the company with which I am connected in the matter of briquetting. It may interest you somewhat, because briquetting is still only in its infancy in this country. We realized from the first, when we began making our experiments some three or four years ago, that a great many abortive attempts had been made in this country to start briquetting plants and putting briquets on the market and they had practically all failed. But in analyzing the reasons for these failures, we soon found that we need not be at all discouraged as to the future of the industry, and I may sum up the reasons perhaps in this brief sentence, that the great majority of those who entered this industry did so regarding it purely as an engineering problem; in other words, their idea was to make briquets—many a man has sunk his \$10,000 to \$15,000 to \$20,000 capital, which he thought was sufficient to put into the industry and get a return from it—and when he got his money invested he found either he had not properly provided for his supplies of raw material, or he had not produced a briquet that was merchantable, and there was no demand for it in that particular locality. For instance, there was a plant started near New York some time ago. They got a kind of press which was successful in Europe and made an excellent briquet, and got a small supply of material which they thought was sufficient for the experimental stage; but when they came to get a permanent supply, the price was a little more than doubled and they had to go somewhere else. Moreover, they found what was still worse, that the particular style and shape of briquets that they made was not at all available for the market that was accessible to them. They failed and the plant has been removed. This is simply an illustration, and perhaps a dozen of similar failures have taken place.

We have started, in Detroit, in the manufacture of briquets, not for railroad purposes, but for domestic purposes, and we have had quite a varied experience, and we are not quite on a thoroughly commercial basis yet, but practically so. The first thing we did was to get an English press of excellent reputation which would make briquets of about four or five pounds weight. We found that nobody wanted to buy briquets of four or five pounds weight in Detroit, and although we had our raw material at hand, our briquets were not salable. The next thing we did was to reduce the size to about 2 inches cube, which was fairly satisfactory, but it happened that that particular type of press was not suited to make the 2-inch briquets, and the output fell off and we had to stop. Then we started another kind of press which had a large output; it looked more encouraging, and we felt very sanguine of success, but we found that we had still to learn and pay for more experience.

This particular type of press which we adopted, although it made a fairly good briquet, yet it had not been worked out in the light of the best experience, and we got a spongy briquet that held 18 to 20 per cent of water; it smoked worse than any coal you ever saw.

We installed a third press, and are now just about on a

commercial basis. We have tried to follow the standard experience which has been developed, as you know, through years of experience in Europe, where the briquetting industry is on a sound and very large commercial basis. We are now making excellent briquets for domestic use, of a mixture of coke and bituminous coal, of whatever type or grade of coal we find available.

The process is very simple. We simply grind up the coal and coke or whatever fuel we are going to use to perhaps one-eighth or three-sixteenths inch in size, having previously dried it; this is mixed with a percentage of pitch, from 5 to 8 or 9 per cent. The mix is then heated, so as to get the pitch in a cementing condition and delivered to the press, whether of the roll press or plunger type, and the finished briquet is produced. That sounds very simple indeed, and it is very simple, but it is one of those kinds of manufacture which requires a very considerable percentage of the personal equation, and the only thing we have not quite gotten to yet at our plant is the development of this personal equation in the men who are actually running the plant.

We have not yet in this country a thoroughly trained corps of operating men, and these have to be educated and developed. We have spent a good deal more money than we expected, but we are very much interested in the subject, and we think the business is going to grow and form a very important industry in this country in places where it is commercially adapted to the conditions which exist there. There is no use in trying to make a briquet from poor material to compete with Pocahontas or other first-class steam coal, at the same price. You cannot do it. But there are many places in this country, and particularly west of the Mississippi river, as I see the situation, where there is a very great field for making briquets, in making available for locomotive and industrial uses, fine, disintegrated coals, semi-lignite and other coals which are now almost useless; and the briquetting industry is going to grow and prosper, and as our coals become more costly we are going to have a situation in parts of our country very much like that in Europe, where the briquets have an important part in the fuel supply of the country.

Ralph Esau of the Barrett Company.

The President: We have with us Mr. Ralph Esau of the Barrett Company. We will be glad to hear from him.

Mr. Esau: The Barrett Manufacturing Company is the largest manufacturer of coal tar and water gas pitch in this country, and therefore we are considerably interested in briquetting, as it affords a very large market for some of the material that is now being burned in a crude state, as Mr. Blauvelt has stated. We stand ready at any time to render all reasonable assistance to those who want to embark in the briquetting industry, those who have a sane proposition. I say "sane" because there are many visionary schemes proposed which have no chance for success.

In regard to water gas pitch, I would like to say that while from a theoretical point of view it may be perhaps the best binder, there are manufacturing difficulties in the way that would make one prefer to use coal tar pitch. Take water gas tar, put it in the still and start distilling; you bring it up to a certain temperature easily enough, but after that the changes that take place in the still occur so rapidly, and one might say so arbitrarily, that we have not found out any scheme as yet to control it, making it almost impossible to produce, still after still, exactly the same kind of pitch. If we get the pitch within five degrees of the same melting point we think we are very, very fortunate, and if we hit it exactly we consider that an accident.

Coal tar pitch, on the other hand, can be run to a definite melting point much more accurately, and I believe the briquetting men will agree with me that it makes a

much better briquet in that it makes a tougher briquet—a briquet that will stand a great deal more handling. That is all I have to offer.

J. E. Rutledge.

The President: I believe Mr. J. E. Rutledge, of the Rutledge & Taylor Coal Company, is somewhat interested, at least I have heard of Mr. Rutledge as being interested in the manufacture of briquetting machinery.

Mr. Rutledge: I am interested in the briquetting industry to the extent of being part owner in machines designed for their manufacture. The paper as presented by Mr. Malcolmson has been very interesting, and the remarks of the gentleman from Detroit also, inasmuch as he, too, has had practical experience.

We are now constructing a plant mentioned in Mr. Malcolmson's paper, at Kansas City, for the manufacture of briquets for domestic purposes. We are also constructing a plant at one of our large coal properties in Illinois, which we hope will be used to make briquets for railroad purposes. Mr. Blauvelt speaks of the limited tonnage of the previous machines that have been on the market; we think we have overcome that with our new design of machine. We have a machine that if it proves satisfactory and meets the requirements for which it is designed, will turn out from 25 to 30 tons per hour of one-pound briquets; with a larger briquet, made by increasing the size of the molds, we will be able to turn out from 50 to 75 tons per hour of railroad briquets. As several of the previous speakers have said, the railroads have to store coal and pick it up at a great loss in the spring of the year; we believe they can overcome that largely by storing our briquets and leaving them in stock indefinitely. A briquet, properly made, is just as good after being stored four or five years as the day it was placed in stock, which means quite a saving to the company.

I can learn a great deal more here by listening than attempting to tell you anything about briquets, but I wished to mention our machine. Like our friend who manufactures the pitch, we take advantage of this occasion to advertise our product. The machine is now in the course of erection and within the next thirty days we will be ready to tell you what we can do with the railroad briquets.

Carl Scholz.

The President: We should like to hear from Mr. Carl Scholz, who has had some practical experience in the manufacture and sale of briquets from his plant in Oklahoma.

Mr. Carl Scholz (Rock Island Coal Mining Co.): Mr. Malcolmson's contribution "Briquetted Coal and Its Value as a Railroad Fuel," is perhaps the most comprehensive and complete article published on this industry.

Like any other new proposition, briquetting has to undergo a development stage before it can finally reach a permanent position. The fact that so many failures have occurred in this country is undoubtedly due to the lack of sufficient technical knowledge and the undertaking of carrying out a process without knowing the real wants and requirements.

It has been proven definitely that coal, although inanimate matter, makes certain demands and requires a treatment, which, if denied, does not produce results. This is clearly shown that under certain treatment, coals which were considered non-coking, can be coked, and in briquetting the same observation has been made. It is not merely a matter of imitating the process which proves satisfactory in one locality to assure a successful briquet in another locality; in addition to the requirements of the coal itself, market and labor conditions are important factors. The successful establishment of a briquetting enterprise, therefore, requires the knowledge not only of trade conditions,

but in addition a knowledge of mechanical and chemical matters, without which success cannot be attained, except by chance or good fortune.

As to the results of briquets as a locomotive fuel, there can be no doubt. Unfortunately, the high cost of binder prevents their extensive use, except under special conditions. A further handicap lies in the fact that locomotives, generally, are built to burn the fuel with which the road is most abundantly supplied. Grates and exhaust nozzles are of a given standard, and where tests are conducted, and briquets in small quantities only are used, these changes are not made to get the best results from the new fuel. There is, generally, some opposition on the part of engineers, and even officials and fuel agents are opposed to the adoption of any fuel which carries a higher price per ton. I have received advice from trainmen that, in their opinion, briquets are of no more value than mine run coal from the same vein, after it had been definitely established by reliable tests that the fuel efficiency of the briquetted coal was 14% greater than mine run coal. I do not believe that these reports were willfully exaggerated.

The principal advantage of briquetted coal for railroads is the storage without deterioration. As long as the bituminous coal situation will be subject to the periodical close-downs on account of inability to form a wage agreement, it will be necessary for railroads to store great amounts of fuel. Inasmuch as the new wage agreements are generally made in June or July, such surplus of stored coal as is on hand when the mines resume operations has to be burned up on account of deterioration. The item of cost, deterioration, unloading and reloading of this storage coal runs into hundreds of thousands of dollars, and can only be overcome by the storage of fuel which will not deteriorate by exposure, as is the case with briquets. This has been clearly demonstrated by the railroads of France and Belgium; and it is hoped that the members of this Association will investigate the advantages which may accrue to the interests which they represent.

E. W. Parker's Letter.

The President: I will ask the Secretary to read letters in discussion of this paper, from Mr. E. W. Parker, of Washington, D. C., and Mr. Robert Schorr, of San Francisco.

The Secretary: Mr. E. W. Parker, Statistician U. S. Geological Survey, Washington, D. C., writes as follows:

"I have read with more than usual interest Mr. Malcolmson's admirable paper on briquetted coal and its value as a railroad fuel. The historical portion of it, particularly that relative to American plants and the numerous failures which have attended the development of the briquetting industry in this country, should have a beneficial effect in deterring parties from going into the business without first making a careful study of the situation, from all points of view. The mistake of our inventors and promoters has been their failure to take advantage of the experience gained in Germany, France, Belgium, and other foreign countries, and thus realize the obstacles to be overcome. Every inventor who has hit upon a special design of press or process of preparing a cementing material has seemed to think he has solved every problem connected with the industry, while the wrecks which strew the path of development tell the rest of the story.

"That such a prominent engineering firm as the Roberts and Schaefer Company, of Chicago, should take serious hold of the proposition, with the idea of building plants suited to local conditions, is a matter of encouragement, for it is a fact that not only is the study of binding materials an important factor, but also the careful consideration of the character of each coal and the quality of pitch, or other binder used, in connection with its adaptability to

the particular coal from which the briquets are to be made. It is also encouraging to learn that the Barrett Manufacturing Company, the most important distiller of coal tar in the United States, is prepared to furnish a briquetting pitch under the specifications which may be submitted.

"Mr. Malcolmson's own experience in the plant at Hartshorne, Oklahoma, is an instance of the difficulty which has heretofore been encountered in securing a uniform quality of coal-tar pitch, where that has been the binding material used.

"Mr. Malcolmson makes one error, however, when he refers to the 'inorganic binders, except coal-tar derivative,' for coal being an organic product, and the tar being obtained from coal, it must necessarily be of organic origin, and coal-tar pitch has the advantage, not only of not increasing the ash in the briquetted fuels, but also of adding to the fuel efficiency. Mr. Malcolmson's article shows on the whole, however, the benefit of careful study, and his contribution to the literature of the subject possesses lasting value."

Letter from Robert Schorr.

The President: Our Secretary will please read the letter from Mr. Robert Schorr of San Francisco, Cal.

The Secretary: The letter reads:

"San Francisco, Cal., June 21st, 1909.

"Mr. D. B. Sebastian, Sec., International Railway Fuel Association, Chicago, Illinois.

"My Dear Sir:

"I thank you very much for the interesting paper on 'Briquetted Coal.' While Mr. Malcolmson's remarks, in regard to our local plants, are in general correct, I wish to say that the reason for keeping the Western Fuel Company's works idle, is the lack of a market for domestic fuel. Last year only a scant 600,000 tons were used in the whole of California, and almost half of this by steamers. All industrial plants, locomotives, and a large portion of the steamers use oil exclusively, and even all gas works have changed over to oil-water-gas since the last seven or eight years. This gas is used on a very large scale for cooking and heating, and our modern dwellings and apartment houses have no provision for the burning of coal. The coal market has been greatly over-stocked during the past two years, and in the effort to get rid of it, coal is sold today for \$7.50 per long ton. To illustrate to you the smallness of our trade, I want to say that during all this time only about 4,000 tons of unsalable screenings have accumulated at the company's yards. As soon as there is a sufficient amount to assure a few months of steady operation, the briquetting plant will be started up again. The price of asphaltum is still high, but not prohibitive.

"The Western Fuel Company's press is entirely different from the one at Stockton, much simpler, cheaper and far superior in every way. I have a number of other press designs partly completed, but do not feel like devoting much time to new schemes in that line. The question of a press is the least trouble. It will be clear sailing when we get a number of briquetting plants operating on a commercial scale, in which event we shall gradually secure a number of good men familiar with the work. As simple as it is, the Western Fuel Company has found out that to operate such a plant intermittently with Greek yard laborers is rather expensive. Mr. Malcolmson could have told them this beforehand. Our conditions here, however, stand a good deal of 'butchering,' as a few cents more or less per ton of briquets cut no figure."

The President: I believe a sufficient interest has been taken in the briquetting industry during the last three or four years, and enough has been learned about the enterprise to make it of practical use in certain portions of the country. As I said on Monday, I believe when the slack

coal proposition reaches a point where the operators are forced to throw it on the ground, with resultant total loss, providing briquetting can be done at a reasonable price, it certainly should prove a practical proposition.

We have, I believe, Mr. J. G. Crawford of the Burlington with us, and no doubt he can say something on the subject of briquetting.

Mr. Crawford: I was going to bring out that point of cost that you mentioned. What experience we have had from briquets with bituminous coal would indicate that we can pay the same price for briquets that we could for lump coal. The briquetting of lignite has been mentioned and that would seem to be the biggest fuel on our line. I understand, although I have been unable to find any records, that over twenty years ago they briquetted semi-lignite coal in the vicinity of Sheridan, Wyoming.

A. Bement, Consulting Engineer.

Mr. A. Bement: Mr. Malcolmson has presented a great deal of interesting data on the matter of briquetting, and his paper is a valuable contribution to the subject.

On the last page he summarizes, however, some advantages of briquetted over raw coal. Inasmuch as the briquetting proposition is less understood, probably, than any other feature connected with the fuel business, for the purpose of arriving at a better understanding, I would like to present certain inquiries in connection with his summary.

Comparative absence of smoke is mentioned as one of the advantages over unbriquetted coal, and the author presents a number of views of locomotives burning briquets to substantiate his claim. Some of these are from tests made by Mr. Carl Scholz, Mem. Ins. Min. Engs., and, of course, are to be relied upon. It would be desirable, however, to have more exact data as to the relative size of the briquets and the coal used. It is a fact that the uniformity in size of pieces of coal tends to a better result, so far as smoke or any other performance is concerned, and briquets are remarkably uniform in size. Thus the question which really presents itself is, whether briquets would make less smoke than pieces of unbriquetted coal of identically the same size, assuming, of course, that in each case the percentage of ash is the same. I wish the author would discuss this feature of the matter.

Less loss of fuel in ash, is given as another advantage. It is true, of course, that where small sizes of coal are burned, more of it will drop through the grate than larger size, and this being the case, there would be a less loss of fuel in the refuse with the briquets. This, however, is one of the advantages accruing from desirable and uniform size of the pieces.

It is stated that increased furnace and boiler efficiency are obtained with the use of briquets, but to prevent confusion, I would state that it is impossible to increase furnace or boiler efficiency, because the efficiency or value of the boiler is dependent upon its mechanical shape or arrangement, which, of course, does not change when a different fuel is used; and the same applies to the furnace in the same measure. The efficiency of steam production, however, can be influenced by the character of the fuel, and this should be kept in mind if we are to have clear thinking on this subject.

It is stated that the fires can be kept up for longer periods without cleaning with the use of briquets than with raw coal, and I would ask if it is the intention to imply that this is true with equal percentage of ash in each case. Personally, I do not consider this claim admissible.

Mr. Adams of the Cotton Belt.

Mr. T. E. Adams (Cotton Belt): In the part of the country in which I live we have lignite and we made sev-

eral tests of lignite with the ordinary grates and front end appliances that we had been using in burning the other coals. With the immense quantity of lignite on our road, inasmuch as we had no coal on our road except lignite, it would be a valuable thing for the community in which we live and the railroad itself, if the lignite coal could be used. The analysis of the coal, as I looked it up after I tried to use it was, 14 per cent moisture, 45 per cent carbon and the other usual ingredients. My judgment was in trying to use the coal, that the percentage of moisture was so high that it took too much heat to evaporate it and that was one of the things that was against the using of it. Now, if the lignite in that country could be used by briquetting, it would certainly be a big improvement.

There is no clinker in any coal in this country if it is properly burned. Everybody lays great stress on the escape of cinders from the front end as being a waste of fuel. I have not heard a man say a word here in regard to going to the cinder pit and examining the fire, cleaning out the ashpan and firebox after the engine had made a trip. There is no need of burning grates with any kind of coal, and the only way that you may have any mishaps with the grates is perhaps breaking them sometimes, or they may get caught in this position (indicating), from some cause or other and it burns the fingers off. You are as liable to do that with briquets as with coal. By the mere fact of your coal being properly spread like that, on the grate surface, there is no excuse for burning out grates with any kind of coal that I ever saw.

Gentlemen, if your test on burning briquets was made the same as the Pennsylvania Railroad made the coal burning test at St. Louis Fair, it is not a proper test. The test of coal made by the Pennsylvania Railroad was of no practical value to the enginemen of this country. I will explain why I take this position. On the last page of Mr. Malcolmson's paper, he says, "no slicing is necessary." I do not know exactly what that means, but I presume he refers to stirring the fire with a slice bar just as they do under the average saw-mill boiler. This is not a practical method of firing coal. A man that will take a slice bar as they did during the Pennsylvania test at St. Louis to stir his fire does not understand the first principles of burning coal. That is what clinkers the coal and if you want to use coal properly, never put a bar in the firebox.

The draft of the locomotive is accounted for by the size of the nozzle. What kind of a nozzle do you run in an engine, 22 by 30-inch cylinder, with the ordinary Eastern coal, or mine run coal, and then what kind of a nozzle would you use with briquets? That is what we want to know, just what does the business.

I believe that the coal we have in the Western states will do just as good work and give just as good results as any coal from the Eastern states. I have seen coal from Pittsburg and southern Pennsylvania that clinkers worse than any other coal, therefore I believe the statement that we bring coal from the Eastern states because we want good coal in the Western states is not a fact.

President McAuliffe.

The President: Mr. Adams, I think you fail to appreciate that Mr. Malcolmson's paper covers a very wide and varied field and, commencing with the matter of draft. I believe it to be a fact that a larger nozzle can be used with briquets than can be used with the ordinary bituminous coal, for the simple reason that the uniform size and shape of the briquet admits of the freer ingress of air, making it possible to provide the necessary volume of air with a larger nozzle. That was the point that Mr. Malcolmson makes in his paper.

The briquet will be used in all probability to a greater extent for domestic purposes than for railroad purposes.

The margin between the cost of briquetting coal and the price ordinarily paid, will not make the briquet, except in certain localities, an economical locomotive fuel. I think it will eventually take the place of the higher grades of lump coal that the individual ton or carload consumer is willing to buy at a price higher than what the railroads could buy and operate under.

In regard to the question of spontaneous combustion, I believe that the great majority of us understand, or think we do, why coal ignites spontaneously. The briquet will not ignite where coal of the same general character that it is made from ignites, for the simple reason that the air can circulate through it, and the temperature never gets an opportunity to rise to the point that it will in the denser mass of mine run or mixed coal.

Regarding locomotive coal, the idea of advocating the briquet is to make practical use of a certain percentage of the output of the average mine which neither the railroads nor the average industrial consumers are willing to take care of, by adding this labor and binder to that portion, we get a first-class and serviceable coal.

Individually I feel under great obligations to Mr. Malcolmson for preparing and reading his paper. I think it is the best thing of the kind I have ever read, it is complete, comprehensive and highly educative; it is a splendid paper and I trust before we pass the briquetting paper written by Mr. Malcolmson, that we express ourselves suitably to the gentleman.

Mr. Malcolmson Concludes.

Mr. Malcolmson: The points brought out in the remarks of the various gentlemen are very interesting, indeed, and I should like to dwell at some length on each point if the shortness of time did not make that impossible.

The various items of criticism suggested by Mr. Adams have been ably answered by our president. I may add further that while Mr. Adams nobly maintains the utter incompetence of those firemen whose fires contain clinkers, nevertheless locomotive fires *do* clinker, and it is this condition and not a theory which confronts us. My experience in burning these briquets, as in burning any fuel, is to the effect that the more you eliminate the personal equation of your fireman, the better and more uniform your results will be. We are quite ready to accept Mr. Adams' word for it that he accomplishes certain results without disturbing his fire, or shaking his grates. These same results can be accomplished better and more easily by the use of briquets than with the raw coal, for reasons already dwelt upon in my paper.

The question of binder is of great importance and the discussions by Mr. Blauvelt, Mr. Esau and Mr. Scholz are very pertinent. Water gas pitch has a greater value in the briquetting of bituminous coal than anthracite or non-coking coals. In many cases it is more desirable because it is cheaper. It may also be blended with coal tar pitch to reduce both the cost and percentage of free carbon. Considering the present state of the art, this is a point that should be carefully considered by any company investigating a briquetting proposition.

In answering the questions suggested in Mr. Bement's remarks, I should like to correct a misapprehension on his part regarding the illustrations used. All the photographs were taken either by myself or assistants under my direction, for the government, and some of these photographs were used to illustrate a recent article by Mr. Scholz. I have used the term "boiler efficiency" as it is accepted in practice when it is desired to interpret the ratio between the heat recovered in the steam and the theoretical calorific value of the fuel. It is true that the design of the furnace is not changed in testing different fuels, but it is also true that no two fuels of different physical and chemical prop-

erties will give the same results when burned under the same boiler, even though their calorific value as expressed in B. T. U.'s is identical. Since a boiler with its furnace is nothing more or less than a steam producer, it looks to me as though the distinction suggested is academic. If we had such a thing as a standard fuel which could be used in standardizing boilers we might speak of their relative efficiency; this would be obviously impracticable as you all know coal even from the same mine varies too much for such a purpose. And again such a standard would be true only for that particular coal, and would be of little value with reference to other coals.

The point I wish to make is, that with briquets and raw coal having the same calorific value and same ash content, the briquets will produce more steam per pound of fuel, even though the coal be sized. This is due not only to the uniform size of the briquets, but their homogeneous structure. There will be a better mixture of the air and gases and the distillation of volatile gases from the green fuel will be slower and more nearly at the rate at which the gases can be entirely consumed.

In speaking of the ability of briquets to maintain fire longer than the raw coal without being disturbed: It is true that a fuel bed of briquets does not need the same amount of cleaning that one of raw coal does, all other conditions being equal. This may be explained in two ways. In the manufacture of the briquets the coal is ground very fine and thoroughly mixed before being compressed into briquets. This tends naturally to make a product uniform throughout in which the non-combustible or deleterious clinker-producing elements are distributed throughout the mass. As the briquet burns, there is much less opportunity for clinker to be formed and the fine ash, due largely to the coal being previously finely ground either falls through the grates or is picked up by the draft and carried through the stack.

It is my experience gained largely while I was general superintendent of the Lanyon Zinc Co. that if you can prevent the slag producing elements from getting together in the proper proportions and under the proper degree of heat, you can prevent clinkers forming. In the manufacture of spelter, which as you probably know is recovered from the zinc ore or jack by a distillation process involving very high heats, the roasted ore, in the form of an oxide, is mixed with coal and coke, put into a retort, and subjected to a very high heat, much higher than is usually obtained in a locomotive firebox. The only way we can prevent a destructive flux from forming and attaching the clay retorts is by keeping the lime and sulphur present in the coal and ore from getting to the surface of the retort.

Mr. Adams impressed upon us this fact without stating the reason. No doubt poking a fire, produces clinkers from a similar cause—it allows the silica and lime and sulphur and iron of the ash to get together making a fusible slag that picks up the non-fusible elements and unburned coke and makes what we call clinker.

It is also possible to carry a thicker bed with briquets than with coal under the same draft. The rate of combustion or fuel burned per square foot of grate surface per hour will be the same, but slower distillation of the gases and the better mixing of the air and gases will produce more complete combustion and a reduction in black smoke. Whether or not there would be an appreciable difference if the sizes of coal were as uniform as the briquets, I have never determined, but for the sized coal sold commercially this is true.

Mr. J. P. Murphy (L. S. & M. S.): If there is no further discussion, I move that it be closed, with a vote of thanks to Mr. Malcolmson, and that the association manifest their appreciation by a rising vote. Carried.

PERSONAL

John Burke, of Wellston, Ohio, has been appointed by Chief Inspector of Mines George Harrison, to fill the position of District Mine Inspector in District No. 1, embracing the counties of Jackson, Lawrence, Scioto and a portion of both Vinton and Gallia. The appointment was promptly confirmed by Governor Harmon, and Mr. Burke's term will commence August 1, 1909, ending July 31, 1912. Mr. Burke has been a practical miner all his life. He succeeds Thomas Walters, whose term expired April 30 last.

* * *

At a recent meeting held in Nashville, Tenn., of the Board of Directors of the companies known as the Cole and Washburn interests, William H. Lindsey, formerly assistant to the president of the first two companies and treasurer of the last named, was elevated to the presidency of the Dealers' Fuel Company and to the vice presidency of the Napier Iron Works and the Crescent Coal Company. To business acquaintances and numerous personal friends everywhere this announcement will come as a recognition of demonstrated ability. Mr. Lindsey was born in Nashville thirty-one years ago, and at 13 years of age entered upon his business career as office boy. In addition to the above positions he is now prominently identified with the American Cynamid Company and large water power interests of the South. The story of his past achievement is one of work—accurate, painstaking, taxing work. It is seldom that positions such as he now holds are reached so early in life by those unaided by commercial influences, and his friends predict for him even greater successes in the business world. Mr. Lindsey's personality is strikingly pleasing and has been a great aid in his rapid advancement.

NEW BRANCH TAPPING COAL FIELD.

Contractors have completed eight miles of railroad from Hunker down the big Sewickley Valley for the Pennsylvania Railroad Co., opening up one of the greatest coal fields in Westmoreland County. Two plants which will be reached by the new branch line are now ready for work and will begin at once. One is owned by the Westmoreland Company and the other by the Youghiogheny & Ohio Coal Co. There is talk of extending the new line to connect with the Youghiogheny branch of the Pennsylvania at Gratztown.

CONSOLIDATED CONNELLSVILLE COKE COMPANY

The Consolidated Conneltsville Coke Company will be ready to begin business October 1st as a corporation, and on or before December 1st as a coke operator. The plan of the coke merger has been submitted to the operators. The foregoing has been suggested as a name and may be adopted, though this has not been finally determined. The capitalization of the company will consist of preferred and common stocks and 5 per cent bonds.

THE NEW MINE AT FLINT, MICH.

The first work on the coal property near Flint, Mich., recently acquired by several local business men, was started recently when material was hauled for the opening of the shaft. The property is located three miles east of Flint. Everything indicates that there is a large quantity of coal of a good quality on the property. The transportation facilities will be furnished by the Grand Trunk railway and only a short spur will be necessary.

WABASH COAL OPERATORS ASSOCIATION.

A meeting was held last week at 609 Bessemer Bldg., Pittsburg, and an organization effected under the name of the Wabash Pittsburg Terminal Coal Operators' Association. This brings before the public the matter of the entrance of the Wabash Railroad into Pittsburg. At that time the promise of good railroad service (good car supply, and competent management lured various capitalists to invest many millions along the lines of this road in extensive mining operations, but they have since felt handicapped by poor traffic arrangements and inadequate service. The organization now affected comprises all of the operators along the Wabash Pittsburg Terminal and represents a total investment of from seven to ten million dollars. The officers elected were W. R. Turney of Greensburg, Pa., president; T. Donohue of Greensburg, Pa., secretary and treasurer. The executive committee consists of the two officers above mentioned and Mr. A. C. Speyer, of Pittsburg, Pa.

The executive committee, in whose hands will rest the policy of the association, are at the present time very reticent and would make no statement for publication. It is rumored that the organization, while only now formally organized, has really existed for a month or two, during which attorneys and statisticians have been gathering information that will be valuable in their fight against claims of discrimination and incompetency.

NEW PENNSYLVANIA COKE PLANT.

A big factor in the coke business will be the new Colonial No. 3 plant of the Pittsburg Coal Company near Grindstone. The first coke manufactured there was shipped Monday, eight car loads being sent out. It is foundry coke of a high grade and low in sulphur. Thirty ovens are in blast at the new plant and as rapidly as possible the total battery of 165 ovens will be fired. It is the intention to build more ovens until 350 have been erected.

KENTUCKY OPERATORS MEET.

The quarterly meeting of the Western Kentucky Coal Operators' Association was held August 3d in the auditorium at the Seelbach at Louisville. I. P. Barnard of this city is president, and D. Stewart Miller, secretary and commissioner. Secretary Miller stated that nothing of much interest came up at the meeting. He said that the business of the operators was moving along nicely, and that there was no friction or trouble of any kind.

HIGHWAYMAN GETS MINERS' PAY.

Near the Rush Run coal mines in Virginia a pay clerk was knocked in the head and robbed of \$4,400, which was to have been apportioned among miners that day, July 31st. No details have been received, except that the robber secured the bag of money and made off to the mountains.

MINERS ARRESTED FOR HOLD-UP.

Carl Goodman, L. Duprez and John St. Clair, coal miners employed at White City, Iowa, were arrested for robbery, being accused by William Joseph, an Assyrian peddler, of holding him up on a lonely road near White City early Sunday morning and securing \$300.

Brown's Creek Land & Coal Co., Welch, W. Va.; capital \$100,000. Incorporators: Howard H. Sypler of Media, Pa.; Herman Wendell of Wayne, Pa.; Morris Williams, Philadelphia, Pa.; Howard W. Perrin, Berwyn, Pa.; John H. Holt, Huntington, W. Va.; and Isaac D. West, Danville, Pa.

TRUE STORIES OF RURAL JUSTICES

When Argument Was Useless.

The late Senator Morgan of Alabama used to enjoy telling of an amusing incident in court as illustrating the methods of other days to influence a country justice by flattery. The incident occurred in a Southern town many years ago. The court was presided over by a rural magistrate, to whom counsel for the defense at once directed his remarks.

"I realize," the attorney began, "that I stand in the presence of a descendant of the grand old Huguenot family that emigrated from France to escape religious intolerance. Many able jurists have sprung from that family and embellished the bench and bar of the Union. Their watchwords are 'honor, truth and justice,' and their names are spoken in every home. The law is so plain in this case that 'he who runs may read.' Shall I insult the intelligence of this court by reiterating a proposition so simple and elementary? Need I say more?"

"No," interrupted the judge. "'Tain't necessary—I'll give you a judgment."

Counsel sat down, while the judge with emphasis knocked the ashes from his corn-cob pipe, and counsel for the plaintiff began:

"May it please the court—"

"Squire, what are you fixing to do?" asked the honorable court.

"I have the closing argument," was the reply.

"Well, you might jest as well set down," observed His Honor blandly; "I've made up my mind for the other side. Judgment for the defendant."

How the Jury Stood.

The difficulty of impaneling a jury in the early courts of Wisconsin may be seen from a story related by a lawyer of that state, afterward a senator of the United States. A Judge Irvin was on the bench, and a murder trial was pending. G. T. Long, familiarly known as "Lucy" Long, was under sheriff. There was difficulty in getting a jury that knew nothing about the facts of the case. The regular panel had been exhausted, and a special venire had been issued and was finally returned.

"Well, Mr. Long," asked the judge, "have you at last secured a sufficient number of jurymen who know nothing about this case?"

"Yes, Your Honor," replied Long; "six of them know nothing about this case, and the other six know nothing at all."

The Justice Fixed the Lawyer.

In Arkansas not many years ago a country justice of the peace called upon a retired attorney, and after presenting a statement of facts, asked, as a matter of friendship, for a legal opinion upon them. This the attorney gave. When the attorney had finished the "Squire" rose and said:

"Well, those are just the facts in a case I am goin' to try next Saturday in my court, and I knowed you'd give me the right kind of an opinion, so I come to you. The costs in that case will be just \$7.50, and I am willing to divide with you. When I was a candidate, some of the folks in my county were mean enough to say that I wouldn't know how to run this office. I intend to show them that I do. The next case I have I'll come to you again, and we'll run that court right or bust a hamstring a-trying."

With that the justice of the peace dropped \$3.75 on his astonished friend's desk and took his departure, satisfied that his first case would get the right kind of a decision when it came up for trial on the following Saturday.

Constructive Chickens.

A Missouri judge, traveling on circuit, once had before him, in a small country town, a case in which a tavern keeper was held for the payment on a land transaction of a large amount of money which he had not agreed definitely to pay. The court declared that, although his agreement was not on record, it was involved in a business proceeding connected with it.

After judgment had been rendered, the court adjourned for dinner, and the judge found that the only eating house in the place was the inn kept by the defendant in the case he had just decided. He also found that the defendant personally superintended the preparation of the meals, and that the food was charged for on the European plan.

The judge called for two boiled eggs, which, with the other food he ordered, were brought to him done to a turn. He ate them, and at the end of the meal the bill was presented to him. He was astonished to read on it the following items:

Two boiled eggs.....15 cents

Two chickens at 75 cents.....\$1.50

Calling the proprietor, he asked: "How's this? I've had no chickens; why do you charge me for them?"

"Those are constructive chickens, Your Honor," answered the innkeeper.

"What?"

"Why, they are implied in the eggs, you know," the man persisted.

His Honor began to understand, and said no more.

Important Business Detained Him.

John Quincy Adams of Massachusetts, third of that name, who died years ago, was very fond of fishing, and not especially fond of his legal profession. One day, the story runs, a case in which he was counsel was down for a trial in a Massachusetts court. Mr. Adams did not make his appearance, but sent a letter to the judge. That worthy gentleman read it and then postponed the case with the announcement:

"Mr. Adams is detained on important business."

It was afterward learned by a colleague of Adams' that the letter read as follows:

"Dear Judge: For the sake of old Isaak Walton, please continue my case till Friday. The smelts are biting, and I can't leave."

The Disputed Umbrella.

The old fable of the lawyers and the oyster, in which the ownership of an oyster being contested, the lawyers ate the oyster and gave a shell to each of the litigants, is matched by a story that Congressman Champ Clark tells of a case in a Western country court.

Two men had come into court with a suit over the ownership of an umbrella which had been left in "the meeting-house." Each one introduced evidence to prove that the umbrella was his.

Being unable to emulate the wisdom of Solomon by dividing the umbrella between them, His Honor postponed

the case. Pending its decision the umbrella was left in the judge's private room.

Later, as he left the court to go home, the judge found that the weather was rainy. He returned to his room, took the umbrella that was in litigation, and proceeded on his way.

Half way home he entered one of the stores of the town, there to make a purchase for his wife. When he was ready to leave the place he found that the disputed umbrella had been taken away by an unknown person.

He then bought another umbrella, which in due course he took to the court room with him the next day. When the case came up the litigants were confronted with it, and neither was able to identify it as his own. The court thereupon fined them both for invoking the law on a frivolous pretext, and they departed empty-handed and decisively "non-suited."

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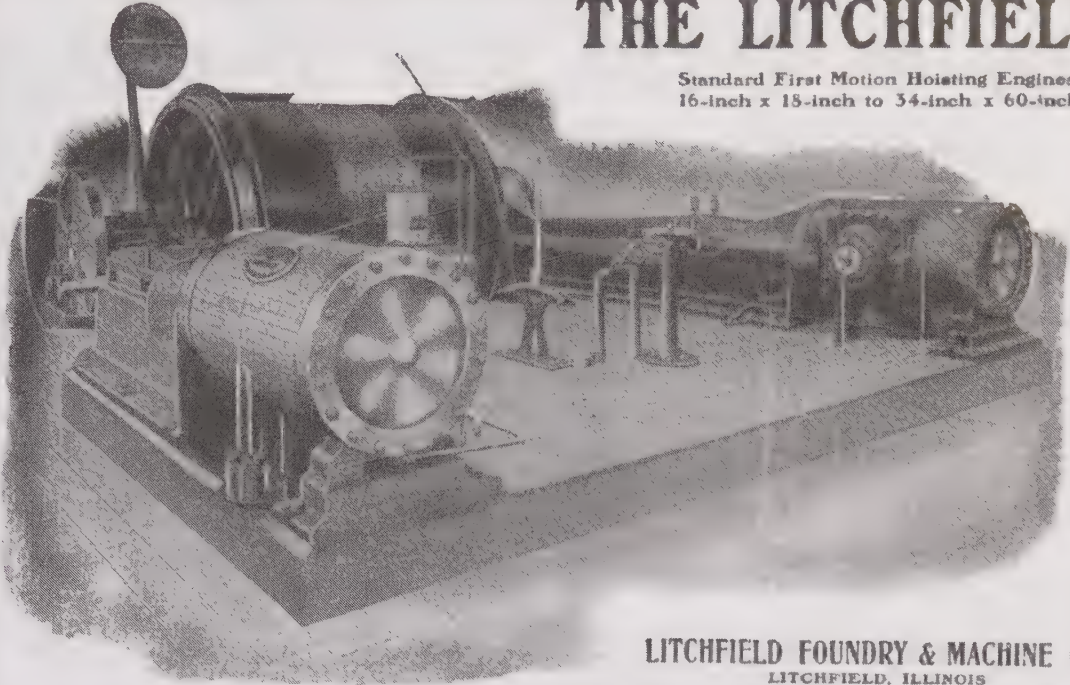
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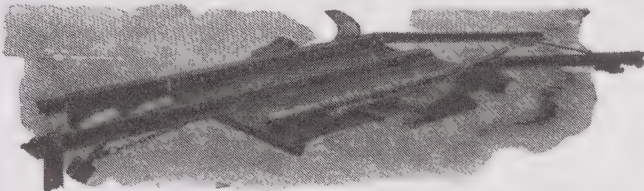


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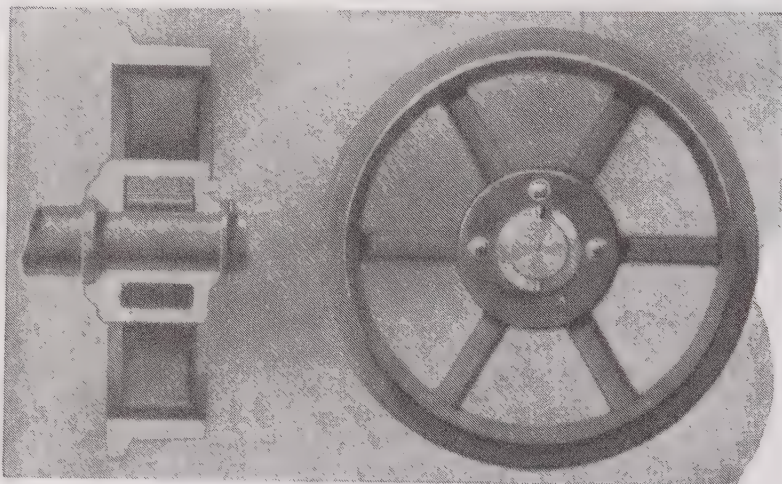
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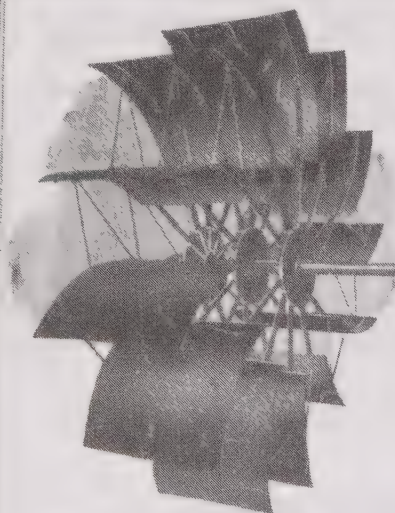
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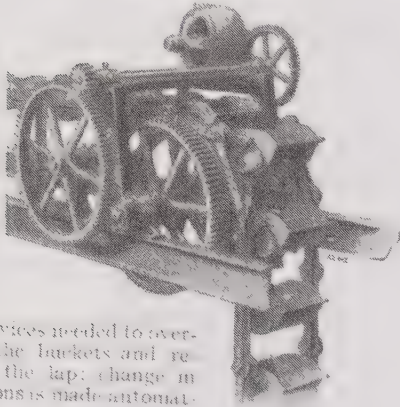
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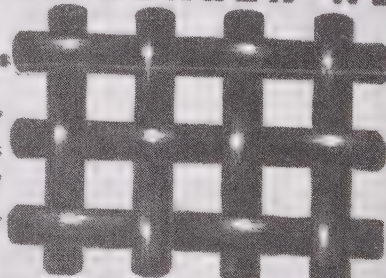
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THE FIRST

- Windmills were invented 1299.
 Wind guns were invented 1648.
 The sundial was invented 558 B. C.
 London was founded by the Romans, 49.
 Spectacles were invented by Spina, 1299.
 Silver was first coined in Rome 269 B. C.
 Muslin was first worn in England in 1670.
 A mint was first established in London in 1066.
 First public lotteries in England, 1569; ceased 1826.
 Soap was first made at London and Bristol, 1524.
 The first mail coaches were established January, 1784.
 Surnames were first used among the nobility in 1200.
 Wood cut engraving was invented by Rust, a German, in 1460.
 Juries were first instituted in 970; Justices of the Peace in 1076.
 Anaximander invented the signs of the Zodiac about 540 B. C.
 Gold and silver were first coined by Phrygia, of Argos, 894 B. C.
 The spinning wheel was invented at Brinswick by Jurgen, 1530.
 Letters were invented by Memnon, the Egyptian, 1822 B. C.
 The Star Chamber Court was instituted in 1487; abolished in 1641.
 Silk stockings were first worn in England by Queen Elizabeth, 1561.
 The art of wine making was brought from India, by Bacchus it is said.
 Herring fishing was first practised by Hollanders, 1164; pickling invented 1397.
 Egyptian hieroglyphics were first deciphered by Young and Champollion in 1824.
 Mourning in white, the general custom until then, was last used in Spain in 1495.
 The first habeas corpus act was passed by the English Parliament, May 27, 1679.
 Water was first conveyed to London by leaden pipes, after fifty years' labor, 1285.
 Muskets were introduced into armies generally, replacing bows and arrows in 1521.
 The art of stereotyping was discovered by William Ged, a goldsmith, Edinburgh, 1725.
 Iron was discovered in Crete by the burning of Mount Ida, 1432 B. C.; first cast in England 1544.
 Sugar was first known in the East Indies; no mention is made of it till 625; brought to Europe in 1150.
 The first watch recorded was owned by Robert Bruce, King of Scotland, 1310, but the maker is not known.
 Maps and globes were invented by Anaximander; brought to England by Bartholemew Columbus in 1489.
 The magic lantern was first constructed by Roger Bacon in 1260. He had invented magnifying glasses, round, in 1252.
 Taxes were first paid in money in England in 1067.
 Taxes originated in those levied by Solon at Athens, 540 B. C.
 The Inquisition begun in Spain in 1204; in Portugal in 1526; abolished in Spain in 1813; re-established 1814; suppressed 1820.
 The first tariff act in the United States was passed in 1790, duties increased in 1799, again increased in 1804, doubled in 1812, etc., etc.
 Turkish empire founded 998.
 Juries were first instituted in 970.
 The Talmud was made B. C. 117.
 English Bill of Rights passed 1628.
 The telegraph was invented in 1794.
 The groves were God's first temples.
 Hudson's Bay was discovered in 1610.
 Tents were invented by Jubal, 3608 B. C.
 Titles were first used in England in 1246.
 Judges were first appointed in England in 1176.
 Rose trees were first planted in England in 1522.
 Aaron Burr tried for high treason August 3, 1807.
 The theory of tides was first given out by Kepler, 1598.
 The use of quicksilver in refining silver was discovered in 1514.
 The first "King's Speech" was delivered 1107 by Henry I.
 Tithes were given first by Moses to the tribe of Levi B. C. 1490.
 Thermometers were invented by Corn. Drebbel, a Hollander, 1620.
 The first steam vessel from America arrived in England July 15, 1819.
 The present flag was adopted by the American Congress June 14, 1777.
 Extreme unction, practiced in the first century, became general in 450.
 The first sacred war, concerning the temple at Delphi, was B. C. 449.
 Six hundred were condemned as witches and burned in France in 1609.
 Fairs and markets were first instituted in England by Alfred, about 886.
 The Vandals embraced Christianity in 400; sacked and pillaged Rome, 455.
 Treason was punished in England by banishment only, until after Henry I.
 The title of King was assumed by the successors of Alexander, B. C. 305.
 The first white man at the North Pole was an American; people differ as to the date.
 Tapestry was invented by Sir Francis Crane, 1255; first manufactory in England, 1620.
 Tolls were first instituted in England for mending the highways in the time of Edward III.
 Wildfire, invented by Callinicus, a Greek, in 680, had then no gunpowder in its composition.
 Tea was first brought to England by the Dutch East India company early in the 17th century.
 The surplice was first worn by pagan priests; brought into the Catholic church by Pope Adrian in 796.
 The word Trinity was first applied to the person of the Godhead by Theophilus, of Antioch, about 150.
 The first theater ever erected was that of Bacchus at Athens, built by Philos, 420 B. C.; the ruins still exist.
 Weights and measures were invented by Phrygia, tyrant of Argos, B. C. 804. A grain of wheat was taken as the basis of weight.
 Wills are spoken of in the Book of Genesis, chapter 48, Solon introduced them at Athens. In 1100 Henry I granted Englishmen the privilege of making wills.

PILLEY'S COMBINATION PACKINGS



Fig. 215

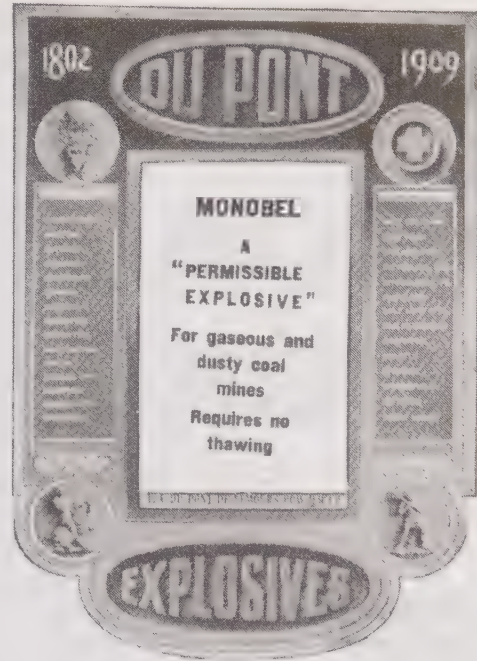
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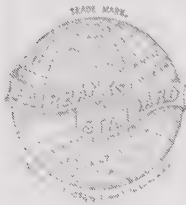
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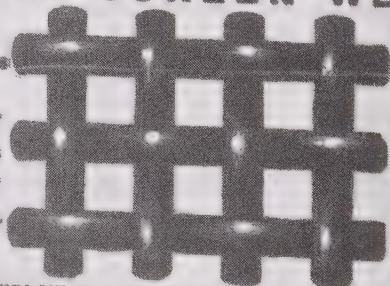
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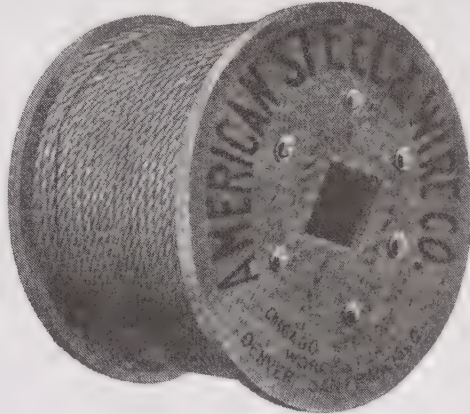
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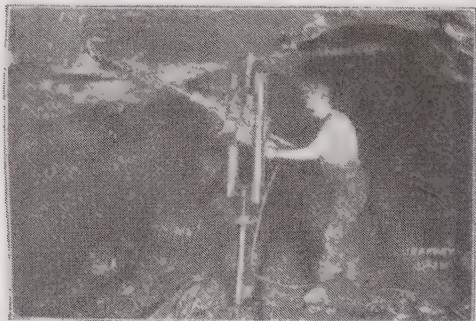
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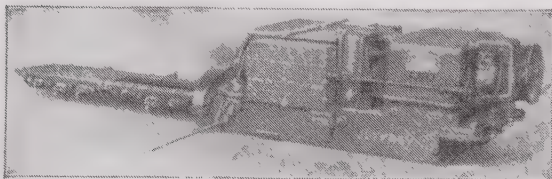
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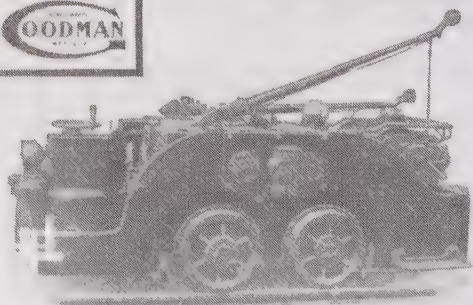
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FUEL

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CHICAGO, ILL., OCTOBER 26, 1909.

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COAL FIELDS OF THE UNITED STATES

United States Geological Survey Figures That Only Four-Tenths of One Per Cent of the Accessible Supply Has Been Exhausted, and That 4,913 Times as Much Remains Unmined as Was Produced in 1908.

The coal areas of the United States are divided, for the sake of convenience, into two great divisions—anthracite and bituminous.

The areas in which anthracite is produced are confined almost exclusively to the eastern part of Pennsylvania, and usually when the anthracite fields of the United States are referred to those of eastern Pennsylvania are considered. This region is included in the counties of Susquehanna, Lackawanna, Luzerne, Carbon, Schuylkill, Columbia, Northumberland, Dauphin, and Sullivan, and underlies an area of about 480 square miles. In addition to these well-known anthracite fields of Pennsylvania there are two small areas in the Rocky Mountain region where the coal has been locally anthracited, although the production from these districts has never amounted to as much as 100,000 tons in any one year. One of these localities is in Gunnison County, Colo., and the other in Santa Fe County, N. Mex. The coal, although only locally metamorphosed, is a true anthracite and of a good quality. In previous years some coal which was classed as anthracite was mined and sold in New England. The productive area was confined to the eastern part of Rhode Island and the counties of Bristol and Plymouth, in Massachusetts. This product, however, is in reality a graphitic and not an anthracite coal, and is no longer mined for fuel purposes. The production in the last few years has been included with the graphite production.

The bituminous and lignite fields are scattered widely over the United States and include an area of something over 496,000 square miles. The previous classification of these coal areas as published in earlier volumes of the report, Mineral Resources of the United States, has been changed as a result of conferences among the geologists working under Marius R. Campbell in the economic geology of coal. The areas are divided, primarily, into 6 provinces, as follows:

(1) The eastern province, which includes all of the bituminous areas of the Appalachian region; the Atlantic coast region, which includes the Triassic fields near Richmond and the Deep and Dan rivers fields of North Carolina, and also the anthracite region of Pennsylvania. (2) The Gulf province, which includes the lignite fields of Alabama, Mississippi, Louisiana, Arkansas and Texas. (3) The interior province, which includes all the bituminous areas of the Mississippi Valley region and the coal fields of Michigan. This province is subdivided into the eastern region, which embraces the coal fields of Illinois, Indiana, and western Kentucky; the western region, which includes the fields of Iowa, Missouri, Nebraska, Kansas, Arkansas, and Oklahoma; and the southwestern region, which includes the coal fields of Texas. The Michigan fields are designated as the northern region of the interior province.

(4) The northern, or Great Plains, province, which includes the lignite areas of North and South Dakota and the bituminous and subbituminous areas of northeastern Wyoming and northern and eastern Montana. (5) The Rocky Mountain province, which includes the coal fields of the portions of Montana and Wyoming which are in the mountainous districts of those States, and all the coal fields of Utah, Colorado, and New Mexico. (6) The Pacific coast province, which includes all of the coal fields of California, Oregon, and Washington.

A map of the coal fields of the United States, prepared by M. R. Campbell, was published in Mineral Resources of the United States in 1907, of which copies can still be secured from the Director of the Geological Survey. This map contains a statement covering the character and geologic age of the coals, and an estimated tonnage of the various fields. The estimates of tonnage have been revised slightly from more recently collated data. The revised estimates place the total original coal of the United States at 3,076,204,000,000 short tons, of which 1,922,979,000,000 short tons are considered to be easily accessible, and 1,153,225,000,000 short tons accessible with difficulty. Classified by the character of the coal, the original supply consisted of 21,000,000,000 short tons of anthracite, 1,661,457,000,000 tons of bituminous coal, 650,157,000,000 tons of subbituminous coal, and 743,590,000,000 tons of lignite.

The total production of coal in the United States at the close of 1908 was 7,280,940,265 short tons, which, including the waste involved in the mining and preparation, represented an exhaustion of 11,870,049,900 tons, leaving as the apparent supply still available, 3,064,334,011,000 tons, or 99.6 per cent of the original supply; that is to say, up to the beginning of 1909 only 0.4 of 1 per cent of the original supply of coal has been exhausted. The quantity of coal still available at the close of 1908 was 7,369 times the production in that year, and 4,913 times the exhaustion represented by that production.

KENTUCKY COMPANY ALLEGED BANKRUPT.

The filing of the petition in bankruptcy of John M. Mulford, President of the Kentucky Coal Mining Company of Owensboro, Ky., came as no surprise to the many Daytonians who are interested in the project. Many people in Cincinnati and Dayton are concerned in the possible reorganization of the concern. The assets were given as \$153,863 and the liabilities as \$342,242. The company was organized in Dayton and most of the stock sold in that section of the state.

Wages of anthracite miners in October are 5 per cent above the basis. In October, 1908, they were 6 per cent above the basis.

NEW CO-OPERATIVE PLAN FOR INDIANA MINE

Some unique features characterize an experiment inaugurated by a co-operative coal mining company near Terre Haute, Ind., says an article in the Engineering and Mining Journal. The property consists of 1,260 acres of coal land, and the mine is capable of producing about 600 tons per day. The plant is equipped with modern machinery and the physical conditions relating to the coal seams are unusually favorable.

The miners are mostly native Americans, and many of them are already owners of property. The miners entered into negotiations with the owners of the property, and as a result, the following provisions were embodied in a one-year lease: 1. The miners shall form a corporation with legal responsibility. 2. All supplies for repairs about the mine and all labor must be paid in cash. (This was necessary so that no labor or material liens could be entered against the property.) 3. The mine must be operated in accordance with the plan already adopted for its development, and in accordance with the best engineering practice. The mine must be kept in good physical condition.

The compensation for the mine owners was to be determined as follows: 1. Rails, props, and other necessary supplies shall be bought out of the gross receipts for coal sold. 2. For three months miners and all laborers employed in producing coal shall be paid in full in accordance with the scale governing the miners' union in the Terre Haute district, before any profits shall be distributed. 3. For the first three months the lessor company shall receive one-fourth of the net profits after deducting wages and expenses. If there are no profits, the owners of the mine receive nothing for the coal taken out or the use of their machinery. 4. After three months the lessor company shall receive 5c a ton and one-fourth of the net profits after deducting wages and expenses.

A charter was obtained from the State of Indiana incorporating the concern as the "Union Mining Association." A company was formed; it adopted by-laws containing the usual provisions and the following distinctive ones:

1. All stockholders must sign these by-laws.
2. No debts shall be incurred by this company and no director or body of directors shall have authority to contract any debts or obligations. Purchases must be made only for cash.
3. The association and members of this association shall be governed by the Terre Haute agreement concerning scale of wages and mine conditions.
4. Every person working in or around the mine shall be a stockholder in the Union Mining Association.
5. Every stockholder agrees to divide losses accruing by reason of the operation of this mine and hereby instructs the bookkeeper of the company to check off his wages any losses which accrue to said company by reason of the operation of the mine.
6. Every stockholder hereby agrees to have the said bookkeeper check off his wages the sum of \$5 to pay for one share of stock in the Union Mining Association.
7. Any member shall have the right to give up his membership by assigning his certificate of stock back to the treasurer of this company. The Union Mining Association, however, shall be in no wise liable for the return of the \$5 paid for such stock. Only one share of stock shall be issued to one member, and each member shall have only one vote.

Each member hereby agrees to hold no other member, or the association as a body, responsible for his death or any accident which may befall him during his work in or around the mine.

The company started out with a membership of 85. The capital stock at first, therefore, was only \$425. A large capital is not necessary for such an association, as the principal outlay of money in coal mining is for miners' wages, and in the matter of wages the men were both creditors and debtors. Up to the present time the scheme has proven successful, and the mine has run steadily.

PHENOMENAL WORK OF AN ELEVATOR.

Two hundred and ten feet by subway, ninety-one feet by electric elevator and two hundred and ten feet by elevated railway, and all this over again in four minutes—this is one of the new records to be achieved in Fort Wayne by the electric coal elevator, which the Fort Wayne & Wabash Valley Traction Company commenced last week to install at its Spy Run power house to replace the old crane wrecked in a wind storm some time ago.

It is the expectation of the officials of the traction company to have the entire device in full working order within thirty days. It will give the focal plant the most modern and best coal conveying apparatus in the middle west, if not in the whole country. It will be possible to transport 170 tons of coal daily (during ten hours) from the coal pit to the bunkers, two tons being loaded, carried and dumped on an average of every four minutes. And one man does it all.

The apparatus consists of (first) a long subway track running a distance of 210 feet under the coal pit, the coal being dumped in mass from the pit to the cars below. Second, the electric elevator with a high speed, and, third, the elevator tracks running 210 feet distance over the coal bunkers.

ANOTHER DAKOTA COAL FIND.

The Fargo, N. D., Forum says that Secretary C. G. Barenstein of the commercial club has a sample of coal at the club rooms which has been the cause of much comment during the past few days. It was dug from a mine located somewhere along the line of the Northern Pacific in North Dakota, and is much superior in appearance to the ordinary lignite. It looks very much like the semi-anthracite coal which was shipped into North Dakota at the time of the coal famine a few years ago from Wyoming and Idaho. This coal was left with Secretary Barenstein by a citizen of the western part of the state who refused to give the exact location of the mine. This man stated that he had discovered the vein two hundred feet below the surface and wishes to get an option on the land before making public the secret.

A CITY WITHOUT COAL.

Natural gas is all that prevented great inconveniences in Carthage, Mo., as the result of a severe coal famine. It had been more than a week since a car of coal has been shipped into the city, and there was no immediate prospect of any arriving. Several families ordered coal to have in case the gas pressure should be weak, but very few have yet had their orders filled. There is practically no coal being received from the Arkansas mines, as labor difficulties prevail there, so no immediate prospect of relief is offered from that quarter. A strike is also on in one of the largest producing coal plants in the Kansas district, and the dealers here are handicapped by this fact alone. A car shortage also figures in the situation.

JOHNSON CITY MINE'S BIG DAY



On the last Wednesday in September the West Side mine of the Johnson City Coal Company, at Johnson City, Ill., shattered all the previous records, so far as Illinois is concerned, for a day's hoist with mule haulage. The actual working time was only seven hours and twelve minutes, or forty-eight minutes less than a full day. The best previous day's hoist was 2,362 tons. The West Side mine uses two-ton cars, and on this day worked 402 men, of whom 30 were drivers. The day's hoist was 2,522 tons. It was not the result of a pre-arranged plan to break the

record, as no coal had been stored on the bottom ready for hoisting, but every ton hoisted was actually mined on that day. This made it necessary to mine and hoist 1,250 cars of coal in the seven hours and twelve minutes.

The result was the natural outgrowth of the efforts that have been made by Superintendent Lockard to get the mine in perfect condition for work and put every man to work that could be used with advantage. The mine is an institution of which Johnson City is justly proud, and it takes a proper interest in all that it does.

GOOD FIRM TO DEAL WITH:

The W. R. Garton Company of Chicago have, for some time past, been advertising in our Journal and have called your attention to a splendid line of electrical mining supplies. This company has the warmest support of the operators in this central western field where they have been engaged as "distributors" since 1898. They carry a very complete line, paying particular attention to quality, prompt shipment, and courteous treatment, and we heartily recommend that you "get acquainted" if you have not already done so. The Garton Company have The "Sure Grip" Clamp and The "Black Diamond" Hanger with which you, no doubt are familiar, also everything necessary for overhead construction of the most up-to-date nature. We note they very particularly emphasize their Mining Machine Cable, Bits, Bit Steel, Puncher Picks and Mine Lamps. Better investigate their lines and send them some orders.

SHIP TWENTY-ONE STEAM TURBINES.

During the month of September, Allis-Chalmers Company shipped a total of twenty-one (21) steam turbines, none of which were of less capacity than 300 K. W. Although this figure does not represent a record in shipments, it nevertheless serves to give a fair idea of the large number of Allis-Chalmers steam turbines being placed in operation at various points throughout the country. The following is a list of September shipments, a number of which include more than one unit to a customer and some of which will augment previous installations of machines from the same builders.

Industrial Works, Bay City, Mich.; Lowland Worsted Company, Woonsocket, R. I.; Anderson & Middleton Lumber Company, Aberdeen, Wash.; Noblesville Heat, Light & Power Company, Noblesville, Ind.; North Adam Gas Light Company, North Adams, Mass.; Nashawena Mills, New

Bedford, Mass.; Clinton Sugar Refining Company, Clinton, Iowa; Fraser River Lumber Company, Fraser Mills, B. C.; National Conduit & Cable Company, Hastings-on-Hudson, New York; City of Columbus, Columbus, Ohio; Oak Park Power Company, Flint, Mich.; Merchants Light, Heat & Power Company, Indianapolis, Ind.; Northwestern Gas & Electric Company, Walla Walla, Wash.; Eastern Pennsylvania Railway Company, Pottsville, Pa.; Wilkesbarre Gas & Electric Company, Wilkesbarre, Pa.; Colorado Springs Electric Company, Colorado Springs, Colo.; Royal Weaving Company, Pawtucket, R. I.; and Virginia Electric Power & Water Company, Virginia, Minn. A considerable percentage of the above represents low pressure units for use in connection with existing high pressure steam plants.

OKLAHOMA INDIANS WOULD SELL.

The Choctaw council, in session at Tushkahoma, passed a memorial asking congress to pay them \$600,000,000 and take over the residue of their property, consisting of 445,000 acres of coal and asphalt land, 2,600,000 acres of unallotted lands, about 5,000 unsold town lots; also the tribal buildings, including the capitol. This is the first time the Cherokee Indians have ever priced their property. If congress accepts this offer, the detail of the transaction will have to be worked out by a commission on part of the government and the Indians. The consummation of this deal will be of incalculable value to the Indians, as well as the entire citizenship of this state. It is the desire of the Indians, since allotments are practically all completed, to have the balance of their estate disposed of, as the holding of large tracts of land in one body is detrimental to the development of the state, and on account of their large land holdings they are anxious to have all the resources of the state developed as fast as possible.



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Official Paper of the Illinois Coal Operators' Association. A. J. Moorshead, President, St. Louis, Mo.; F. W. Lukins, Vice President, Chicago; E. T. Bent, Secretary-Treasurer, Chicago; C. L. Scroggs, Recording Secretary and Secretary of Commission Executive Board—FIRST DISTRICT: H. N. Taylor, A. L. Sweet, S. M. Dalzell. SECOND DISTRICT: Hugh Shirkie, R. R. Hammond, W. G. Hartshorn. THIRD DISTRICT: T. F. Holmes, D. D. Shumway, Lee Kincaid. FOURTH DISTRICT: F. W. Lukins, W. S. Ridgely, S. A. Shafer. FIFTH DISTRICT: W. L. Schmick, A. J. Moorshead, W. K. Kavanaugh. SIXTH DISTRICT: R. H. Zollner, F. D. Secor, James Forester. SEVENTH DISTRICT: Evan D. John, J. D. Peters, Walter W. Williams, T. J. O'Gara. EIGHTH DISTRICT: Richard Newnam, C. I. Pierce, W. J. Spencer. NINTH DISTRICT: J. E. Rutledge, Joseph Lumaghi, E. C. Donk. HONORARY MEMBERS AT LARGE: O. L. Garrison, St. Louis; Randolph Smith, St. Louis; G. W. Traer, Chicago.

Official Paper of the Iowa Coal Operators' Association—H. L. Waterman, president, Ottumwa; David Dinning, vice-president, Cincinnati; E. C. Smith, treasurer, Des Moines; Joseph Sharp, commissioner and secretary, Albia.

Official Paper of the Western Kentucky Coal Operators' Association—I. P. Barnard, president, Louisville; F. P. Wright, vice-president, Bevier; D. Stewart Miller, commissioner, Owensboro.

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At the Turn of the Road.

S. E. KISER.

The road that seemed so long at first is coming to an end,
The inn which we have sought to reach is just beyond the bend;
The way behind us stretches far and strewn along its length
Are graves in which they lie who lacked our luck or will or strength.

Before us lies another way that winds and stretches far,
And there high hills and lonely miles and pleasant valleys are;
And many who are strutting now, without a pang or care,
Will be among the ones who fall for want of courage there.

Before we start upon the road which branches to the right
Beyond the inn where we shall have our lodgement for the night.
It will be well perhaps to give a thought to those who fell
And ask if we were always fair when straining to excel.

FAMILIARITY WITH DANGER.

There is no class of workers who are entitled to, and who receive, a larger share of the world's sympathy than the men who mine the world's coal. They constitute a class of themselves, a class that is necessary to the progress of the world and to the comfortable housing of countless peoples of the earth. No discussion of the importance of coal in the economies of the race, and in the comfort of a vast number of the people could be indulged in at this day that would not seem trite and oft repeated. And the general public and the employers of the miners alike are vitally interested in the welfare of these workers. Sometimes it appears to the outside observer that the miner himself sometimes shows less interest in his safety than do those not miners. Perhaps the constant presence of danger minimizes their appreciation of it, and causes them to take chances as they grow older in the business that would not be taken when they first enter upon it. It often seems that even the most experienced men take desperate chances, and these desperate chances too often, though not always, result in death and mutilation.

Dangerous places are marked off in a coal mine, so that the workers may not enter unawares, and very dangerous places are "dead-lined." Yet how often we read of accidents occurring in these places after they have been so marked and designated. In the casualty at Number Eight mine of the Rock Island Coal Company, where ten men were killed by an explosion in one of the entries, would seem, from such scanty information as is at hand, to have been a case in point. One of the victims of this explosion was the fire-boss who had himself dead-lined that entry. Yet he and nine others were killed by an explosion in it.

Laws can not prevent accident in coal mining, and even the close observation of all the laws can not abolish the danger; yet, in most cases, a strict compliance with the terms and spirit of these laws would have prevented the loss of life. Casualty insurance and liquidated damages are not a remedy, not a recompense, for human life lost. The utmost they can accomplish is to provide temporarily for those bereaved. Accidents are too frequently followed by learned editorial demand for further legislation. This is not what is needed, for very few coal mining states but have laws already which, if enforced, could minimize the danger and the loss of life. In some states, certainly in Illinois, the trouble lies in a multitude of more or less conflicting laws rather in the lack of legislation.

It is the duty, and will undoubtedly be the first care of the State Mining Commission, to so codify the present laws as to remove all doubt and ambiguity and establish just what is the law, so that it may no longer be hard, sometimes impossible, for even the judges on the bench to distinguish just what the law really requires. This work is a great one, and with the excellent commission now appointed there should be no reason why some sensible and strong recommendations can not be agreed on for legislative action—not in the direction of new laws so much as in the simplification and rounding out of the laws we already have. The commission is made up of coal operators who have studied

the matter in the past, of practical miners who have come in contact with the problems in a practical way, and outside gentlemen of intelligence who can consider the whole situation from the standpoint of the greatest good to the whole industry and to the men who are interested in it from both ends, as well as the consumer. It is a great work, and will doubtless be well done.

DANIEL STERN'S CHEF D'OUVRE.

Our friend, Daniel Stern, of the American Artisan, has written a striking little brochure on "What They Discovered at the North Pole," which seems to us to cover the subject as fully as most people will care to go into it. It is a notable thing in the history of literature that some of the pronounced successes have been achieved by men very busy in other pursuits, who wrote merely for the pleasure derived from it. In this instance the pronounced success that at once marked this literary effort of Mr. Stern was due to his well-known power of condensing into short and pithy terms an epitome of all the information to be had on the subject matter of the book. Indeed, it may be called a booklet rather than a volume, since its contents are not voluminous. But nothing more succinct has yet appeared treating of the subject than Mr. Stern's graphic description of the vista that stretched out as far as the eye could see in every direction—north, south, east, west, it would be called by the thoughtless observer, but in reality all south along the varying meridians, all alike undistinguishable save to the man trained in the use of acute and sensitive instruments with which these are to be determined. One feels, rather than reads the description, and arises from the perusal of the work with new admiration for the genius which can so completely comprehend and express the results of four hundred years of Arctic research, and put it in words that even the most casual reader can fully understand.

Some books are born of the inspiration of a bright and timely thought, and this is one of them. It is no re-recitation of what others have written, no digest of such things as may be gleaned from the cyclopedias or from the observations of others who have penetrated the frozen North. Every word is vital, every word necessary to the story, and not a phrase, indeed not a word could be eliminated without serious loss to the narrative. The conclusions are based on no far-fetched theories. There are no ifs, ands or maybes. It is a cold statement of the facts, yet tempered by the geniality of good intent and good will. The work, while printed in limited edition and for private circulation, has attained the distinction of such a demand that it is doubtful whether Mr. Stern can now supply them. The fortunate friends remembered with copies of the first edition have cause to prize them, and do prize them.

The success attending the first annual meeting of the International Railway Fuel Association, held in Chicago last spring, is well remembered by those who had the pleasure of attending its sessions and hearing the informing papers read and discussed. To the second meeting of the association the eyes of the interested public are already looking, and these will be glad to learn that the date of the

second annual meeting has been tentatively fixed for May next year. The exact date is not yet settled, but the month is fixed and the exact time will be determined upon and announced later.

At a dinner attended by about 200 electrical men of the country. President Samuel Insull of the Commonwealth Edison Company said that the facilities exist for the two biggest railroad companies entering Chicago to electrify their terminals at a lower cost for electrical energy than obtains elsewhere in the big cities of the world. He also stated that the facilities would be at hand within a year for producing electrical energy sufficient to supply any other two railroad terminals in the city. He did not speak of the engineering features involved at all, but simply of the fact that the current could be supplied. There were, as he said, many great engineering problems outside of the supply of the current, and with these he did not pretend familiarity.

The electrification of the railway terminals in Chicago is advocated solely for the purpose of eliminating the smoke. The report of the President of the Illinois Central Railroad distinctly states to his directors the "The elimination of smoke, to meet all reasonable public demands, can be accomplished without the use of electric traction." If the smoke can be eliminated, and if the smoke be eliminated, we dare say that the public will be satisfied, whether it be by electrification or otherwise. "Results is what we're after."

Those who waited too long to order their winter's supply of coal are already finding in some sections of the country that it is harder to get orders filled than it was when coal was cheaper. The country's business in all directions demands more cars and the coal traffic no longer has all things its own way in that regard.

The twenty-ninth annual convention of the American Federation of Labor will be held at Toronto, Canada, beginning at ten o'clock Monday morning, November 8th, and continuing in session from day to day until its business has been completed. A very lively session is anticipated.

If anyone not a regular subscriber to FUEL sees this issue, to them we put the question: Is there any way in which you can get greater value for two dollars than to subscribe for this journal. Fifty-two issues like this for just two dollars?

At a meeting of the Illinois Federation of Labor, during which the presiding officer used a bung-starter for a gavel, a resolution was adopted opposing local option. There was considerable uproar and much discussion.

A lady speaker at the Illinois Federation of Labor in Belleville said that the women "are going to make it hot for the men." Why the future tense?

If you see their advertisement in the FUEL, you may depend on their high standing and on their ability to serve you properly and at fair prices.

COAL FAMINE FEARED IN EASTERN CITIES.

Eastern coal dealers are being told by the mine operators and big wholesale companies that there is considerable danger that there may be a coal famine later in the year, and not alone from a shortage of coal, but because of a shortage of cars in which to transport the fuel.

The enormous recovery in manufacturing, the opening up of factory after factory, which was closed, or partially closed during the business depression, has been evidenced in other branches of commerce, and during the coming winter there is liable to be an extreme shortage of domestic anthracite coal.

All over the country in the anthracite sales territory general business has been recovering by leaps and bounds until today it is almost, if not quite, up to the prosperous times of 1906. The steel industry's figures show that practically ten per cent of the furnaces is now in operation; the unemployed during the panic are now fully employed, and it is more or less difficult in all lines to find capable labor. Upon again getting employment, the artisan, mechanic and tradesman naturally first devoted his earnings to the settlement of his grocery, clothing, house rent and other similar obligations, and this process is still going on, the result being that a great number of men who are now employed, but who were out of employment a year ago, and have more than used up their savings, are from one to two and one-half months back in their purchases of their winter coal supply.

With the first extreme cold snap, when it becomes an absolute necessity to light the fires and warm the house, there will be such a deluge of orders for anthracite coal that the coal companies will not be able to meet the demand. To-day all lines of business activity have recovered, except the anthracite industry, whose breakers are still running at from 40 to 50 per cent of the normal output of this season of the year.

It is easily seen from this that unless the distribution of anthracite coal for the coming winter begins at once so that the breakers can be fully operated, there will surely be a great shortage.

The difficulty of the situation will also be increased greatly by a car shortage. The recovery of business in all lines has been so great that the entire available car equipment of the railroads of the country will shortly be in use, and when the demand for anthracite coal comes, there will be no cars in which to move it. Without doubt this condition will bring about extreme hardship and more or less suffering in many communities.

Over 3,000,000 less tons of domestic anthracite coal have been shipped from the breakers to the end of September, 1909, and without doubt 6,000,000 or 7,000,000 less tons have gotten into the bins of customers than had been placed at this time last year.

NEW PRODUCT OF COAL TAR.

A product of coal tar which has many valuable characteristics for insulation bears the name of oxy-benzyl-methylengly-colanhydride. For general purposes, the material will be known as bakelite. It possesses some of the combined properties of hard rubber, celluloid and amber, being harder and stronger than the two first, although it does not have their flexibility. On the other hand, it withstands heat and is not attacked by solvents, and has the advantage of being much less costly. It is infusible and

insoluble, and does not soften at such temperatures as 350 degrees, Centigrade. At the degree of heat which melts glass it chars without entering to fusion. It can be obtained transparent or opaque; can be mixed with filling materials, such as clay, asbestos, wood pulp and the like. It is said that generators and motors can be impregnated with the raw material, and, by the simple process of heating under pressure, synthesis of bakelite will take place in or around the fibers which cover the wires of the coils, the whole, therefore, being transformed into a hard, infusible, insulated mass.

Bakelite has been employed for molded insulators which possessed great mechanical strength, high insulating power and ability to withstand high temperatures. Cheap, soft wood, impregnated with bakelite, becomes as hard as ebony, is rot-proof and a good insulator. A coating of bakelite is said to give a beautiful finish on wood, which is not affected by boiling in water, in solvents or in chemical solutions.

ONE WEAKNESS OF SOCIALISM.

The naive belief that while the making of shoes and breakfast foods and steel rails needs the most careful study and regulation with relation to society's welfare, art, literature, education, and discovery may be trusted to grow spontaneously in the otherwise unfertilized soil of mere "sufficient leisure"—that given short enough hours of work and large enough pay, good books, great newspapers, good schools, happy homes, beautiful pictures, and sublime music will somehow make themselves—simply proves that while the Socialist has given a great deal of attention to the conditions that environ the making of a shoe or a steel billet he has given none at all to those which govern the making of anything which cannot be measured by the yard or weighed by the pound, or at least quote *f. o. b.* cars at St. Louis or New York.

What are the conditions, for example, which sting the human mind to the production of good literature? Are they communal ownership of property, abundance of food and infinite leisure to contemplate the glories of nature? If so, the islands of the South Seas, where the fish fill the nets, the cocoanuts hang from the trees and the "league-long roller" thunders all day on the coral reef should give us the masterpieces of the world.

Socialism will be forced to face the whole problem of the production of social goods, intangible as well as tangible, before it is even considered seriously by the majority of American citizens.—*St. Louis Republic*.

SHORTAGE OF CARS AT PITTSBURG.

The complaints of coal operators in the Pittsburgh district over the continued shortage of cars are growing loud and long as time passes and no relief comes. Railroad employees say it is due largely to the heavy traffic of coal to tidewater and a delayed return of empties to the mines. The car trouble has become so acute on the Baltimore & Ohio as to compel a revival of the old plan of apportioning the equipment in proportion to the traffic of each district. This means that the Boswell and other Somerset county mines will have only a prorata of cars instead of an ample supply every day.

IDLE ON ACCOUNT OF ONE MAN.

Six mines of the Sheridan Coal Company, at Fuller, Kansas, are idle because of the employment at the McCornick mine of a man who, the miners say, is not entitled to the place. The miners demand his removal and the employment of one of the older miners in his place.

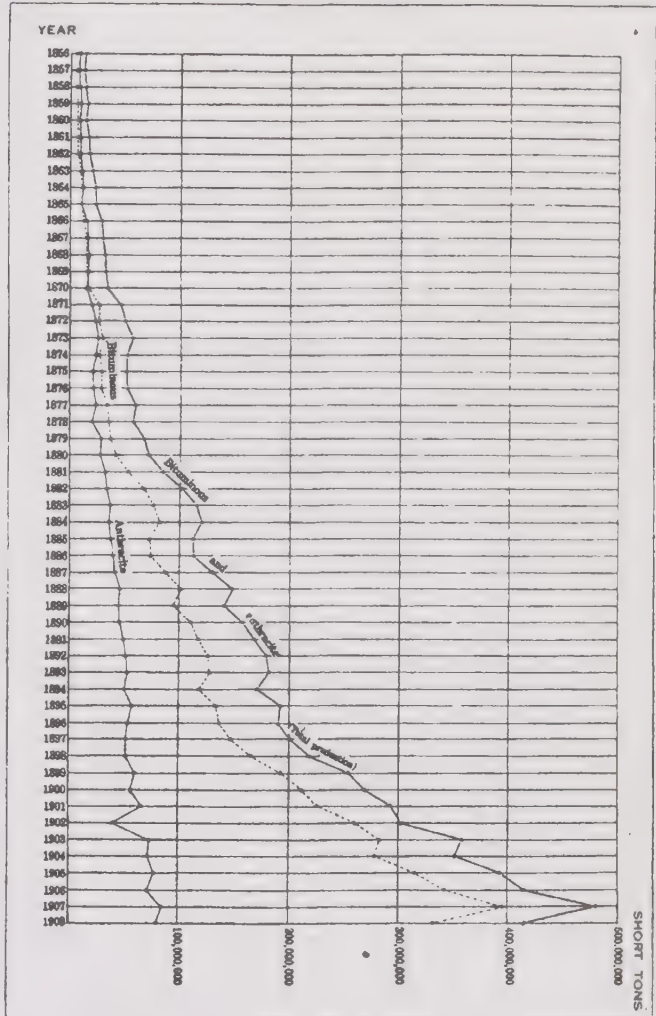
ANTHRACITE AND BITUMINOUS COAL PRODUCTION

The accompanying diagram illustrates the comparative growth of anthracite and bituminous coal from 1856 to 1908, according to the figures of the United States Geological Survey. Prior to 1870 the larger production was of Pennsylvania anthracite. Since 1870 the production of bituminous coal has rapidly outstripped that of anthracite. The output of anthracite in 1908 was 74,347,102 long tons, or 83,268,754 short tons, an increase over 1880 of 48,766,913 long tons (54,618,942 short tons), or 190.6 per cent. The production of bituminous coal in the same time has increased from 42,831,758 short tons to 332,573,944 short tons, an increase of 289,742,186 short tons, or 676.5 per cent. Anthracite was at one time an important factor in blast-furnace practice, but its use in that line of industry has now almost entirely ceased, having been supplanted by coke made from bituminous coal. The principal demand for anthracite will be in the future, as it has been in the more recent past, restricted largely to domestic trade, for which such sizes as furnace, egg, stove, and chestnut are required. The breaking down of the lump coal, which was formerly a marketable product, for the preparation of the domestic sizes results in a much larger proportion of the small or undesirable sizes, all of which are sold at less than the cost of production.

The percentage of these small sizes has increased from 23.1 per cent in 1890 to 40.74 per cent in 1908, while the percentage of sizes above pea coal, or what may be termed the profitable sizes, has decreased from 77 to 59.26 per cent. All of the profits on the mining operations must be obtained from the prepared domestic sizes, while the revenue obtained from the smaller sizes, which are sold largely for steaming purposes, in competition with bituminous coal, serves only to reduce the cost of the domestic sizes. The conditions under which the anthracite mines are operated, the greater depths to which the workings are carried, the consequent increased expense of mining, and the increasing tendency in the cost of labor, all contribute to making anthracite fuel more and more a luxury. No hope is held out to the consumer that anthracite will in the future be sold at lower prices than those which prevail today; but, on the other hand, there is every reason to believe that prices must advance in accordance with the increasing cost of production. It is only by reason of economical administration that prices are not higher than they are.

During recent years the anthracite operators have adopted the policy of making an allowance of 50 cents per ton from circular prices for domestic coal purchased in April of each year, with an advance of 10 cents per ton for each succeeding month until the schedule prices are restored in September. This has had a more salutary effect in steadying the anthracite trade than any other action taken by those controlling the anthracite industry, as the discount induces many to buy.

The statistics covering the distribution of the coal production of the United States for consumption have been obtained only since 1889. These are shown in the following table, by five-year periods since 1890 and annually since 1906:



Year.	Loaded for shipment.	Local trade and employees.	Used at mines and steam, etc.	Made into coke.	
1890...	128,365,965	9,009,285	5,063,953	15,331,760	
1895...	158,380,289	9,655,505	6,677,539	18,404,197	
1900...	223,782,088	9,077,242	9,189,746	27,634,951	
1905...	324,059,447	12,208,687	14,042,173	42,412,328	
1906...	341,526,755	11,640,238	14,833,984	46,156,301	
1907...	399,421,195	13,091,034	17,561,373	52,286,822	
1908...	354,551,092	11,862,885	17,200,377	32,228,344	
Year.	Product.	Value.	Price.	Days.	Men.
1890....	157,770,963	\$176,804,573	\$1.12	216	318,204
1895....	193,117,530	197,799,043	1.02	195	382,879
1900....	269,684,027	306,688,164	1.14	212	448,581
1905....	392,722,635	476,537,294	1.21	212	626,035
1906....	414,157,278	513,079,809	1.24	209	640,780
1907....	480,363,424	614,798,898	1.28	231	680,492
1908....	415,842,698	532,314,117	1.28	195	690,438

LABOR PLATFORM OF THE BAPTISTS.

The Illinois State Baptist Convention at Galesburg adopted the following strong labor platform last week:

We, the Baptists of Illinois, 150,000 strong, in convention assembled, declare our interest in and hearty sympathy with the workman in his efforts for the amelioration of the conditions with which he is surrounded in every day life. We hereby give him the assurance that we stand—

For equal rights and complete justice for all men in all stations of life.

For the principle of conciliation and arbitration in industrial discussions.

For the protection of the workers from dangerous machinery, occupational diseases, injuries and mortalities.

For the abolition of child labor.

For such regulation of the conditions of labor for women as shall safeguard the physical and moral health of the community.

For the suppression of the sweating system.

For the gradual and reasonable reduction of the hours of labor to the lowest practical point, with work for all, and to this end we have already indorsed the ten hour law; and for that degree of leisure for all which is the condition of the highest human life.

For a release from employment one day in seven.

For a living wage in every industry.

For the highest wage that each industry can afford, and for the most equitable division of the products that can ultimately be devised.

For the recognition of the golden rule and the mind of Christ as the supreme law of society and the sure remedy for all social ills.

MINER FROZEN TO DEATH.

Frozen solid and standing up beside a snowbank, the body of Charles Hall, a miner of Cable Cove, Ore., was found by J. W. Bell, states a Portland, Ore., correspondent of the Los Angeles Times. Hall had been missing since the first of the year, and repeated searches had been made for him. Hall had been working in a tunnel of his mine and had evidently injured himself. He had bandaged his leg, but gave up the attempt to reach his cabin, and leaned against the snowbank, freezing to death. Falling snow had covered the body.

LABOR ADVOCATES CABINET PLACE.

The army of wage earners in this country will seek to have one of its representatives in the president's cabinet; labor leaders have decided to wage its fight with renewed vigor before congress to obtain legislation to establish a department of labor with a secretary co-equal with the secretaries of other departments. This was the foremost topic before the executive council of the American Federation of Labor in Washington and that body authorized the preparation of a bill which will be introduced in congress soon after it convenes.

Prominent industrial educators from various parts of the country were in Washington to participate actively in the meeting last week of the industrial education committee of the federation. The object of the meeting is to obtain all the information possible regarding the different systems of industrial education in use in the United States and in foreign countries.

The industrial education committee was created at the last convention of the federation, held in Denver, Colo. It is made up of John Mitchell, Samuel Gompers, Frank Morrison, John Golden, Fall River, Mass.; James Wilson, Cincinnati; Miss Agnes Nestor, Chicago; Mrs. Raymond Robins, Chicago; John B. Lennon, Bloomington, Ill.; Com-

missioner of Labor Neill, Representative Wilson of Pennsylvania, Frank Duffy, Indianapolis, Ind.; Hugh Frayne, Scranton, Pa.; James O'Connell, Washington, D. C.; Charles H. Winslow, Arlington, Mass.; Edward Hirsch, Baltimore; James Roach, Albany, N. Y.; the Rev. Charles Stelzle, New York City; Stuart Reid, Lynn, Mass., and James Duncan, Quincy, Mass.

The committee will report to the Federation meeting in Toronto.

ILLINOIS FEDERATION OF LABOR.

The Illinois State Federation of Labor closed its meeting at Belleville Friday by electing as officers:

President—Edwin R. Wright, International Typographical Union, Chicago.

Vice-presidents—Peter Fitzgerald, Alton; Joseph Morton, Chicago; Daniel Gorman, Peoria.

Secretary-treasurer—James F. Morris, United Mine Workers, Springfield.

Executive board—Ernest Mortimer, Kewanee; Charles P. Gaede, Bloomington; J. A. Kain, Chicago; Richard Tippet, Springfield; Harry Nelson, Streator; J. J. Kearney, Quincy.

James B. Connors of the Switchmen's union of Chicago was elected delegate to the American Federation of Labor convention at Toronto next month.

The re-election of President Wright was foreshadowed in his indorsement by the convention in the appointment of Frank Farrington, of the United Mine Workers, to the position of state organizer. Delegates had charged that Wright violated the constitution of the federation in making the appointment by failing to call a meeting of the state executive board to obtain the consent of that body. A heated discussion ensued and the convention was thrown into an uproar that continued until Wright's supporters came to the rescue by voting solidly for the adoption of the report. The fight against Wright was led by Thomas A. Shea, of Bloomington.

LIGHTNING STRIKES A MINE STORE.

During a hard thunderstorm recently the commissary of the main Jellico Mountain Coal Company mine, located at Kenesee, Ky., five miles north of Jellico, was struck by lightning and burned to the ground. The entire stock of goods, valued at \$20,000, was destroyed. Less than half the loss is insured. Moses Sheldon, white, and Abner Brown, colored, who were standing near the store when the bolt of lightning struck, were knocked down and severely burned.

CHAMPAIGN COAL COMPANY BUYS.

The entire plant of the Jones Coal Company at Champaign, Ill., has been taken over by the Champaign Coal Co. By the terms of the agreement the office fixtures, books and coal as well as the coal sheds of A. A. Jones and his two partners have become the property of the stockholders in the flourishing east side coal company. William J. Coughlin, manager for the Champaign Coal Co., will also have personal charge over the affairs of the new acquisition.

WANTS \$10,000 FOR NEGLIGENCE

On the grounds that the company was negligent in not providing mine props after repeated requests for them had been made, and because through the absence of these supports, a fall of slate crushed his left leg, John H. White has filed a petition in the district court asking for damages in the sum of \$10,000 from the Phillips Fuel Co. of Ottumwa, Ia.

INSPECTION OF MINES

An Address Delivered Before the American Mining Congress, Goldfield, Nevada, October, 1909, by J. A. HOLMES,
U. S. Geological Survey.

Mine inspection is and should remain a function of the state. It has for its purpose the proper execution of state mining laws; and the object of these laws is primarily the safety of the miners, incidentally the protection of mine property.

The agent of the state in the carrying out of these laws is the inspector of mines and his assistants. These should be sufficient in number for frequent and thorough inspection; the basis for selection and continuance in office should be fitness for office and efficient service. They should be independent of political or other extraneous influences. They should receive compensation for services commensurate with the responsibility resting upon them, and the experience and technical training required. They should have reasonable laws to execute. They should have the willing co-operation of both operators and miners in carrying out the provisions of the law. Under such conditions men of the best type will accept and hold these positions; and their actions will receive the support of public opinion and of the courts.

This inspection by officers of the state, whenever practicable, should be supplemented by the work of special inspectors employed by the mining companies. Many such companies have already adopted such a practice and report favorable results. In other coal mining countries this practice has become much more general. But in recommending to American coal operators the adoption of practices found successful in other countries, it should be remembered that the selling price of coal at the mines in the United States is generally less than half that in other countries; and this fact may render impossible here many improvements in behalf of safety and efficiency which the American operator would otherwise be glad to inaugurate.

The function of the federal government in connection with mine operations is one of inquiry and research, having in view two fundamental purposes:

- (1) Greater safety for the lives of miners; and
- (2) The conservation of mineral resources.

In connection with ordinary mine inspection the special service rendered by these investigations will be:

- (a) The development of data such as will serve as a basis for the enactment of reasonable laws, rules and regulations.
- (b) The establishment of facts which may serve as a basis for the settlement of disputes between inspectors and operators or operators and miners, either by the courts or boards of arbitration.

The propriety of having such inquiries and researches conducted by the federal government in relation to mining will scarcely now be questioned in view of the fact that such policy has long since been accepted in relation to agriculture, forestry, fisheries and other industries. But it may be added that the practice avoids extensive duplication of labor and expense by the states; the federal investigations naturally cover a wider field of experience, including also experience in other countries; and the results are likely to be more generally accepted as impartial, being further removed from local influences.

Under such an arrangement there will be no basis of conflict between the state and federal interests; no encroachment of one on the duties or rights of the other.

The support of the federal work will depend upon its securing and maintaining the good will and co-operation of the state's inspectors; and the success of both the state and federal work will depend upon their securing the proper friendly co-operation of the miners and operators.

Nor is anyone now likely to question the proposition that the conservation of resources is a national as well as a state problem. In the mining, treatment and use of mineral products no state boundaries are involved. An ore mined in one state may be milled in another, smelted in a third, refined in a fourth, and used in many different states. The coal mined in Pennsylvania or West Virginia may serve as a basis of heat, light, power and various manufacturing in a dozen or more different states, and may be essential to the interstate transportation of mails, passengers and freight; while the manufactured products to be transported may in turn serve as an essential basis of other industries in the remotest parts of the countries. The iron ore of Minnesota may in Illinois be mixed with coke from Pennsylvania and limestone from Indiana, to be fabricated into steel to serve as frames for buildings in San Francisco, or New Orleans, or Boston, or as railway bridges across the Columbia, the Mississippi, the Hudson or the Nile.

The products of the mine constitute no less than 65 per cent of the total freight traffic of the country; they are indispensable to our interstate and international commerce; and are essential to both our present and future welfare and greatness as a nation.

It is believed that the development of a system of co-operation between the state and federal authorities such as is thus outlined, will contribute to the improvement of the service by both the state and federal government; will safeguard the rights of the states; will encourage greater uniformity in mining laws and regulations in the different states; will aid in the conservation of life and resources, and will be generally helpful to mining industries of the country.

EIGHT-HOUR LAW CONSTITUTIONAL.

Judge James R. MacFarlane, in Quarter Sessions Court in Pittsburg, handed down an opinion deciding the eight-hour law in Pennsylvania to be constitutional. The decision was in the case of the Commonwealth of Pennsylvania against John F. Casey, a contractor, engaged in the construction of the filtration plant at Pittsburg. Some time ago he was charged with violating the eight-hour law in working his employees overtime, and upon a trial of the case was found guilty. A new trial was asked for, and Judge MacFarlane refused it. In his opinion the judge says:

"The statute referred to in the special verdict makes eight hours a legal day's work for mechanics, workmen and laborers in the employ of the state or any municipal corporation therein, or otherwise engaged in public work. Now, the court being of opinion that the act of July 26, 1897, under which the defendant was indicted, is constitutional, and that the acts found by the jury to have been done by the defendant are sufficient to support the verdict of guilty of a misdemeanor, it is now ordered that the verdict be entered guilty as indicted."

DUST WAS EXPLODED BY BLACK POWDER.

With a detonation that shook the grounds of the old Arsenal, representatives of the United Mine Workers of America were given an illustration of the action of different explosives. Half a hundred representatives of the unions and their visiting friends stood in front of the great steel-ribbed gallery, 100 feet long and six feet in diameter, where some of the most important experiments made in connection with coal mining have had their final fruition.

Men long used to mining, men who are now engaged in mining, witnessed these explosions by experts of the United States Geological Survey, for the time under the supervision of Prof. Roberts, and to say that they were interested in putting it too weakly.

The explosions were with coal dust, that being the only matter in dispute among miners, all admitting that gases are liable to ignite at any time. It had been argued that coal dust would not ignite.* The purpose of this illustration was to show that coal dust would ignite with tragic consequence under certain conditions and with certain explosives.

For the first explosions what is called coalite and carbonite were used and these are called "permissible explosives." The great tube was filled with coal dust, but when the artificial explosion was made there was no result except discharges of dust and gases from the apertures provided for the escape of physical forces from the gigantic gallery.

Then came the explosion of black powder, non-permissible, but which has been in use in all mines and is in use in many now. The gallery was filled, as before, with coal dust, Prof. Roberts being in charge. At a signal the cannon was fired and there came a sound like young thunder or old war. Tremendous volumes of gases and smoke in the form of apparent steam and black volume poured from the vents provided to safeguard the whole gallery from destruction.

Chief State Mine Inspector Roderick was a central figure in the half hundred miners and visitors. The miners present said the proof of the explosion was overwhelming.

There had always been a dispute about the possibility of the ignition of coal dust, but there could no longer be the least question, and the trend of opinion among the representatives of the miners was that the scientific experiments of the Government at the old Arsenal grounds have illumined the whole problem of mining with a new light which may, in effect, save thousands of lives, even within a few years.

It was the general voice of the practical men present at the test that the Government is doing a great work in this experimentation and that the recommendation of "permissible explosives" will result in immeasurable saving of life in the mines.

TRINIDAD OIL DEVELOPMENT.

Deposits of coal and oil have been known to exist in Trinidad for many years, but the coal is of an inferior quality and the oil deposits have never been extensively developed, hardly sufficient for home demands. But increasing local demands and a general spirit of stimulation have prompted a resumption of active work on the Mayaro oil fields, situated inland about 35 miles east of Port of Spain. The Oil Exportation Company is now employing a large number of men in road and bridge building and repairing and getting machinery in order to resume drilling opera-

tions, which have been suspended for some time. New borings will be made and the fields more fully exploited. Necessary tramways will be constructed from the oil fields to Quayagnagare Bay, where a jetty will be built to facilitate the shipping of the oil. Patent bungalows are being brought from Europe for the housing of the Europeans thus employed.

The New Trinidad Asphalt Company, operating at Pitch Lake and Brighton, where an oil deposit also exists, is erecting, at large expense, 2 steel storage tanks for crude oil, having a capacity of 65,500 barrels, nearly 2,000,000 gallons. These tanks are 115 feet in diameter and 30 feet high. One of them will shortly be ready for use. Wells have already been sunk to the depth of 900 and 1,000 feet. This American company has thus far exploited the oil industry only for its own use, but now intends to greatly develop this natural resource of Trinidad and store the oil subject to the demands of trade.

If the development of these oil fields shall prove profitable, as is confidently expected, another important item will find its place in the export statement of Trinidad.

GOMPERS BARRED THE GUARDSMAN.

Organized labor paid a notable tribute in Washington to the home-coming from Europe of Samuel Gompers, President of the American Federation of Labor, who arrived there October 12th. The occasion was featured by a monster parade, followed later by a big mass-meeting at Convention Hall. Estimates of enthusiasts as to the number of men and women who participated in the parade ran as high as 20,000.

An incident in connection with the parade which occasioned considerable discussion and comment was the action of President Gompers in refusing to allow a company of the National Guard of the District of Columbia to participate. Although the Central Labor Union went on record in favor of the guardsmen taking part in the celebration, there was some opposition by some delegates on the grounds, it is said, that the organized militia of the country was used only to "shoot down strikers and union men." It was thought that the matter, however, was settled, but on the day of the parade protest was lodged with Secretary Morrison, of the Federation, against the action of the Central Labor Union. He immediately communicated with Mr. Gompers, who at the time was in Baltimore, en route to Washington, and the latter directed that the guardsmen should not parade.

MINERS' VENGEANCE AIDED A BLIND TIGER.

A mob of coal miners at Star City, Ind., attacked the house of a fellow miner, Jos. Smith, who had made affidavit against alleged keepers of a "blind tiger." The windows of the house were broken by stones, and shots were fired through the walls. Smith was not hurt. He was himself arrested charged with drunkenness and selling liquor illegally. Miners took from Deputy Sheriffs part of the alleged blind tiger goods against which Smith had given information.

MINE EXPERT FOR VENEZUELA.

Consul Isaac A. Manning, of La Guaira, sends the information that the Minister of Foreign Relations has been requested by the head of the Department of Public Works in Venezuela to direct the Venezuelan Minister to Great Britain to employ a mining expert, who shall be designated as Mining Engineer and Inspector of Venezuela. The duties of this engineer are not set forth further than the character of the designation would indicate.

NEW LIST OF PERMISSIBLE EXPLOSIVES

The following list of permissible explosives tested prior to October 1, 1909, by the United States Geological Survey of Pittsburg, Pa., is hereby published for the benefit of operators, mine owners, mine inspectors, miners, and others interested. The conditions and test requirements described in the first explosive circular, issued under date of May 15, 1909, have been followed in all subsequent tests.

Subject to the provisions named below, a permissible explosive is defined as an explosive which is in such condition that the chemical and physical tests do not show any unfavorable results; which has passed gas and dust gallery tests Nos. 1 and 3, as previously described in circular No. 1; and of which, in test No. 4, $1\frac{1}{2}$ pounds (680 grams) has been fired into the mixture there described without causing ignition. Those permissible explosives previously reported in Explosive Circular No. 1, are marked *.

*Ætna coal powder A, Ætna Powder Co., Chicago, Ill.
 Ætna coal powder AA, Ætna Powder Co., Chicago, Ill.
 *Ætna coal powder B, Ætna Powder Co., Chicago, Ill.
 Ætna coal powder C, Ætna Powder Co., Chicago, Ill.
 Bituminite No. 1, Jefferson Powder Co., Birmingham, Ala.
 Black Diamond No. 3, Ill. Powder Mfg. Co., St. Louis, Mo.
 Black Diamond No. 4, Ill. Powder Mfg. Co., St. Louis, Mo.
 *Carbonite No. 1, E. I. DuPont de Nemours Powder Co., Wilmington, Del.
 *Carbonite No. 2, E. I. DuPont de Nemours Powder Co., Wilmington, Del.
 *Carbonite No. 3, E. I. DuPont de Nemours Powder Co., Wilmington, Del.
 *Carbonite No. 1-L. F., E. I. DuPont de Nemours Powder Co., Wilmington, Del.
 *Carbonite No. 2-L. F., E. I. DuPont de Nemours Powder Co., Wilmington, Del.
 *Coalite No. 1, Potts Powder Co., New York City.
 *Coalite No. 2-D, Potts Powder Co., New York City.
 *Coal special No. 1, Keystone Powder Co., Emporium, Pa.
 *Coal special No. 2, Keystone Powder Co., Emporium, Pa.
 *Collier dynamite No. 2, Sinnamahoning Powder Mfg. Co., Emporium, Pa.
 *Collier dynamite No. 4, Sinnamahoning Powder Mfg. Co., Emporium, Pa.
 *Collier dynamite No. 5, Sinnamahoning Powder Mfg. Co., Emporium, Pa.
 Giant A low-flame dynamite, Giant Powder Co. (Con.) Giant, Cal.
 Giant B low-flame dynamite, Giant Powder Co. (Con.) Giant, Cal.
 Giant C low-flame dynamite, Giant Powder Co. (Con.) Giant, Cal.
 *Masurite M; L. F., Masurite Explosives Co., Sharon, Pa.
 *Meteor dynamite, E. I. DuPont de Nemours Powder Co., Wilmington, Del.
 Mine-ite A, Burton Powder Co., Pittsburg, Pa.
 Mine-ite B, Burton Powder Co., Pittsburg, Pa.
 *Monobel, E. I. DuPont de Nemours Powder Co., Wilmington, Del.

Tunnelite No. 5, G. R. McAbee Powder and Oil Co., Pittsburg, Pa.

Tunnelite No. 6, G. R. McAbee Powder and Oil Co., Pittsburg, Pa.

Tunnelite No. 7, G. R. McAbee Powder and Oil Co., Pittsburg, Pa.

Tunnelite No. 8, G. R. McAbee Powder and Oil Co., Pittsburg, Pa.

Provided:

1. That the explosive is in all respects similar to sample submitted by the manufacturer for test.

2. That No. 6 detonators, preferably No. 6 electric detonators (double strength), are used of not less strength than 1 gram, consisting by weight of 90 parts of mercury fulminate and 10 parts of potassium chlorate (or its equivalent), except for the explosive "Masurite M. L. F.," for which the detonator shall be of not less strength than $1\frac{1}{2}$ grams charge.

3. That the explosive, if frozen, shall be thoroughly thawed in a safe and suitable manner before use.

4. That the amount used in practice does not exceed $1\frac{1}{2}$ pounds (680 grams), properly tamped.

The above partial list includes all the permissible explosives that have passed these tests prior to October 1, 1909. The announcement of the passing of like tests by other explosives will be made public immediately after the completion of the tests.

With a view to the wise use of these explosives it may be well in this connection to point out again certain differences between the permissible explosives as a class and the black powders now so generally used in coal mining, as follows:

(a) With equal quantities of each, the flame of the black powder is more than three times as long and has a duration three thousand to more than four thousand times that of one of the permissible explosives; the rate of explosion also is slower.

(b) The permissible explosives are one and one-fourth to one and three-fourths times as strong and are said, if properly used, to do twice the work of black powder in bringing down coal; hence only half the quantity need be used.

(c) With 1 pound of a permissible explosive or 2 pounds of black powder, the quantity of noxious gases given off from a shot averages approximately the same, the quantity from the black powder being less than from some of the permissible explosives and slightly greater than from others. The time elapsing after firing before the miner returns to the working face or fires another shot should not be less for permissible explosives than for black powder.

The use of permissible explosives should be considered as supplemental to and not as a substitute for other safety precautions in mines where gas or inflammable coal dust is present under conditions indicating danger. As stated above, they should be used with strong detonators, and the charge used in practice should not exceed $1\frac{1}{2}$ pounds and in many cases need not exceed 1 pound.

JOSEPH A. HOLMES,

Expert in Charge Technologic Branch.

Approved, October 11, 1909.

H. C. RIZER,

Acting Director.

STATE MINING COMMISSION.

The State Mining Investigation Commission met at Springfield, Monday, October 18th, and effected organization by electing Richard Newsam chairman and John H. Walker secretary. After a discussion of the proposed scope of the work to be done by the commission, they adjourned to meet in Chicago, Monday, October 25th. This meeting is in session as FUEL goes to press.

CHAMPION MINER IS BLIND.

By a coincidence unusually odd, at Buck Mountain colliery, Hazelton, Pa., the champion worker is a blind man named John Minnich. According to statements by his fellow workers, he assists in all kinds of dangerous work and loads more coal than any other man in the mines. His blindness prevents Minnich from seeing dangers his more fortunate companions constantly have in view, and he is, therefore, indifferent to peril. Minnich lives at Rockport and supports a family.

WATER TO SUPPLY THE CITY.

In drilling for coal the Boone, Ia., Block Coal Company struck a flowing well of such size that it may yet furnish the city of Boone with water. The company was drilling to locate another shaft and at the depth of 96 feet they struck a flow of water of such force and quantity that it spouted from the ground to a height of twenty feet. They had gone through a five-foot strip of sand when they struck an eighteen-inch space of what seemed to be nothing but water.

BAD EXPLOSION AT HARTSHORNE, OKLA.

What is supposed to have been a gas explosion killed ten men and injured another in Mine Number Eight of the Rock Island Coal Company, at Hartshorne, Okla., last Thursday morning. One of the men killed was the fire boss, who had "dead-lined" the entry in which the explosion occurred. Mine Inspector Peter Hanraty and mine officials who entered the mine after the accident found the entry too full of gas to permit at that time of an investigation of the cause.

FOUND THREE VEINS OF COAL.

In drilling an oil well on the farm of Alfred H. Hurt, in the oil and gas territory in Monroe township, near Petersburg, Ind., the drill passed through three veins of coal. The first vein was found at 64 feet, and was 6 feet in thickness; the second at 160 feet, and was 9 feet thick, while the third was a seven-foot vein, and was down 252 feet. Not a drop of water was encountered in the well until the drill had passed through the last vein.

IDLE MINES RESUME WORK.

The O'Gara Coal Company, which operates thirteen big coal mines in Saline County, Ill., started their No. 7 mine the first of last week, with two hundred miners. No. 11 started the previous week. These two mines have been idle for some time. Increased demand for coal is the cause.

INDIANA COMPANY'S NEW RECORD.

The month of September broke all records for the Summit Coal & Mining Company, whose mine is one of the oldest in Greene county, Ind. The company hoisted coal 24 out of a possible 26 working days during the month and put on the market 20,000 tons of coal. As an evidence of re-

turning prosperity, the company has more orders than at any time since 1907, and but for lack of cars would work every day.

WESTERN KENTUCKY ASSOCIATION.

The Western Kentucky Coal Operators' Association has elected the following officers for the ensuing year: George C. Atkinson, secretary of the St. Bernard Coal Company, president; Capt. I. P. Bernard, of Louisville, president of the Williams Coal Company and the Taylor Coal Company, vice-president, and D. Stewart Miller, of Owensboro, secretary and treasurer.

NEW MINE ENCOUNTERED DIFFICULTIES.

The new coal mine near Maran, about two miles south of Woodward, Iowa, has had its share of trouble. Sand and water prevent going any deeper until other machinery is at hand. They are about seventy feet from the coal. Should the water be too great another location will be looked up, some distance from the present place.

Moline, Ill., dealers are receiving more orders for coal than they can take care of.

The Virginia Iron, Coal & Coke Company is preparing to open two coal mines that have been idle for about two years.

The Pennsylvania Railroad has awarded a contract to Roberts & Shafer Company, of Chicago, for a Holman coal and sand station at Northumberland, Pa.

Coal discoveries in Turkestan are proving of immense value, and in connection with the copper discovered have made Trukestan of great interest to the miner.

The output of coal in Alsace-Lorraine in 1908 was 2,367,742 tons, valued at \$6,880,818. This is an increase of 173,500 tons over 1907, with an added value of \$880,600.

State or federal control of the Pennsylvania coal fields was urged by President Charles R. Van Hise, of the University of Wisconsin, in an address in Milwaukee, before the City club.

The American Mining Congress made a specific request of the American people that the interests of that branch of the national production be made the care of either a separate bureau or a department of the government.

Eighty-eight per cent of the ovens in the Klondyke and Connellsville coke fields are now in blast. The production for the week ending Saturday, September 25, was 428,924 tons, an increase of 4,975 tons over the week previous.

George Catlett Marshall, a well-known coal and coke operator and brick manufacturer, is dead of paralysis at Uniontown, Pa. He was an active Democratic politician and was one of the delegates to the national convention at Denver last year.

At a special meeting of the stockholders of the Ohio Fuel Supply Company, the capital stock of the company was increased from \$8,000,000 to \$10,000,000. One million of the increase will be offered for sale to the stockholders and the balance will remain in the treasury. The funds derived from the sale are to be used in anticipated extensions of pipe lines.

Leo J. Coyle and J. H. Lawrence closed at Pittsburg an exchange deal involving properties valued at \$18,000. In the transaction J. M. Larmour transfers to James Parker five acres of surface and 101 acres of coal now open for mining, and located at Godfrey station on the Allegheny Valley Railroad 29 miles from this city. In payment Mr. Parker gives Pittsburg real estate.

INCIDENTAL PROBLEMS IN GAS-PRODUCER TESTS

As part of its investigation of methods for increasing the efficiency of fuel resources, the United States Geological Survey is studying the general problems involved in the economic use of fuels in gas producers. Among many incidental problems of prime importance that have arisen in the course of this study are those of determining, under practically constant conditions, the duration of gas-producer tests necessary to reduce the possible error to a minimum and of determining the differences of temperature in the fuel bed of the gas producer and the influence of such differences on the chemical reactions taking place within the producer.

In attempts to improve the gas producer, considerable attention has been given by manufacturers to such problems as those of fixing or isolating the combustible components of the tar, utilizing the waste heat of the producer for the generation of the steam required by the plant, and applying the suction principle to bituminous coal and other tarry fuels. Little study, apparently, has been given to the physical and chemical conditions most suitable to the formation of hydrogen and of carbon monoxide, with a view to regulating the percentages of these gases in generators using fuels other than anthracite coal or charcoal.

Reports on the problems first stated above are given in Survey Bulletin 393, which can be obtained free of charge by applying to the Director of the Survey at Washington.

The bulletin consists of two papers, one, by R. H. Fernald and C. D. Smith, on the factors affecting the proper length of tests, the other, by J. K. Clement and H. A. Grine, on temperature differences in the fuel bed.

Messrs Fernald and Smith, summarizing the results of their experiments, state—

"That throughout a test the fuel bed should be maintained in uniform condition, with regard to both the character of the fire and the thickness of the bed.

"That failing in this, special care should be exercised to see that the fuel bed is in the same condition and of the same thickness at the close of a complete test, or end of a test period, as at the beginning.

"That a test should never be started when the producer has been standing idle for some time with "banked fire," as the fuel bed will not be in the average condition under which it will be required to work during the test.

"That if, as the appointed hour for closing the test approaches, the fuel bed is not in the proper condition, the time of closing the test should be postponed until the bed naturally assumes the proper thickness and character. No forcing of conditions should be allowed simply to bring the test to an end at a previously determined hour."

Messrs. Clement and Grine report that—

"Temperature observations were made and gas samples taken in different parts of the fuel bed of the gas producers. The temperature was found to be highest at the bottom of the fuel bed and to decrease from this point to the top of the bed.

"The temperature of the inner region of the fuel bed was found to be 300° or 400° lower than that of the outer layers. A corresponding inferiority in the quality of the gas in the center of the producer could not be established; probably on account of the defective method of sampling.

"It has been suggested that by an improvement in the method of admitting the draft to the fuel bed a more uniform distribution of temperature, and consequently a gain

in the capacity of the producer and in the quality of the gas, might be obtained.

"Reference has been made to recent experiments by one of the authors which have established 1,300° C. as the lower limit of temperature for the formation of a gas rich in CO."

NEW ENTERPRISES

Sunnyside Coal Company, Denver, Col., dissolved.

Consolidation Coal Company, Baltimore, Md.; capital, \$20,000,000.

Empire Coal and Coke Company, Nashville, Tenn.; capital, \$100,000.

Lincoln Fuel Company, Chicago; capital stock increased from \$10,000 to \$50,000.

Bickett Coal and Coke Company, Chicago; capital stock increased from \$200,000 to \$500,000.

Southern Coal and Mining Company, East St. Louis, Ill.; number of directors increased from five to nine.

Tioga Coal Company, Wilkesbarre, Pa.; capital stock increased \$550,000, and bond issue increased \$500,000.

Continuous Process Coke Company, Augusta, Me.; capital, \$1,000,000. E. M. Leavitt, president and treasurer.

Brockton Ice and Coal Company, Portland, Me.; capital, \$400,000. President, A. F. Dunham; treasurer, M. S. Wells.

Carnegie Fuel Company, Superior, Wis.; capital, \$100,000. Incorporators—C. P. White, R. J. Shields, George B. Hudnall.

Coal Hill Coal Company, Terre Haute, Ind.; capital, \$50,000. Directors—Marshall G. Lee, James B. Mullikin, Linus A. Evans.

Wyoming Fuel Company, Spokane, Wash.; capital, \$10,000. Incorporators—Lucy Marsh, Clarence Marsh, jr., Clarence Marsh, sr.

The T. H. Bunch Coal Company, Little Rock, Ark.; capital, \$15,000. Incorporators—T. H. Bunch, Fred J. Reuthehuber, C. E. Mum.

Makoma Coal Company, Harrisburg, Pa.; capital, \$10,000. Incorporators—Walter P. Maguire, Leroy J. Wolfe, Charles L. Bailey, Jr.

Hogbee Block Coal Company, Kansas City, Mo.; capital, \$150,000. Incorporators—Charles F. Larson, E. N. Chesney, William Walton and others.

Leonard Coal & Supply Co., Columbus, O.; capital \$5,000. Incorporators, W. E. Leonard, C. A. Leonard, Edna B. Leonard, Kathryn Leonard, Mae E. Leonard.

Twin City Light and Fuel Company, Zanesville, O.; capital, \$100,000. Incorporators—C. Lou Wright, E. M. Armstrong, A. C. Armstrong, J. R. Greiner, Charles Graves.

Excello Coal Company, Little Rock, Ark.; capital, \$5,000. Incorporators—J. P. Hoyer, president; W. M. Kavanaugh, vice president; M. E. Wormser, secretary and treasurer.

Franklin Coke Company, Uniontown, Pa.; capital, \$60,000. James S. Braddock is president; Paul Mauzy, treasurer, and Charles Kendall, secretary. The other directors are W. M. Sheppard, George W. Wilson, Carl Mauzy, Dr. George Roberts, Christian Echard, W. H. Echard, Frank Dey, O. E. Hibbs, Joseph M. Bates, William J. Dickson.

BLAME THE SOCIALISTS FOR SPLIT OF UNIONS.

That the split in the Ohio Federation of Labor is part of a socialist movement to injure the American Federation of Labor is the declaration of a resolution adopted, October 15th, by the boilers' faction of the Ohio Federation of Labor.

The resolution intimates that Max Hayes of Cleveland, who was one of the leaders of the fight to seat electrical workers and Central Labor union delegates in opposition to the wishes of the national council, desires to head an opposition organization of union labor.

The "bolters'" convention elected a full set of officers and a delegate to the American Federation convention, which meets at Toronto November 8, as did also the old State Federation, which was captured by the "insurgents." The latter today refused to give up the charter, which was revoked by the national council. Both conventions finished their work without transacting much of the business which was in prospect.

The resolution adopted by the federation as now recognized by the national council is directed to "all trade unionists in the state of Ohio," and reads in part:

"The division which took place in the Ohio State Federation of Labor is primarily caused by the hostility of the socialists toward the American Federation of Labor. By every process they have conspired to cripple and make ineffective the efforts of the American Federation of Labor, because the federation has steadfastly refused to adopt their policies. The matter of seating the seceding electrical workers afforded these economic enthusiasts an opportunity to ridicule and belittle the federation, which they did in approved fashion.

"Max Hayes, the chief socialist of the state, held himself in reserve to put the finishing touches on a clever battle waged by the trades unionists. In his denunciation of the officials of the American Federation of Labor he depicted them as czars and autocrats.

"Over Hayes' own signature there has appeared in the press a threat that a new national body was to be formed to further antagonize the American Federation of Labor. Since the appearance of that article it is rumored that he is desirous of heading such a movement as its chief executive officer. This is one of the numerous attempts made in recent years to lay the foundation for an organization with which it is proposed to wage warfare against the American Federation of Labor.

"In addition it is also proposed to insist that the men of labor must accept the political creed of those who have proved to be apostles of failure.

"The American Railway union, the Western Labor union, the American Labor union and the Industrial Workers of the World, socialistic trades and labor alliances, the International Laborers' union, the International Liberty union, all devised and fostered by those who desire it, was to be destructive instead of constructive, have left in their trail desolation and destruction. To crush rather than uplift has been the conspicuous feature of these movements."

The resolution further declares absolute allegiance to the laws and policies of the American federation.

BRAKE FAILED TO HOLD.

One man killed, two probably fatally injured and five others seriously hurt, is the result of a brake failing to hold at a mine at the Edgewood Coal and Coke Company on Stoney Fork, nine miles from Middlesboro, Ky.

NEW ENGLISH CRUDE-OIL ENGINE.

Consul Frank W. Mahin states that an engineering firm at Duffield, Derbyshire, has recently produced an engine, suitable for either marine or stationary purposes, which is designed to use heavy crude oils, such as cost in England six or seven cents a gallon. It is thus described by a writer for a technical periodical:

"The engines, which are of 25 horsepower with two cylinders, and 50 horsepower with four cylinders, run on the Otto cycle. The vaporizer is a feature of special interest. It is heated by the exhaust gases, and in it the oil, after having been preheated by passing through a jacket around the exhaust pipe, and having been atomized by compressed air, undergoes a process of fractional distillation. The portion of the oil that is of a lower flash point than about 220° F. is vaporized, and, meeting a current of air, which has also been preheated, is drawn into the cylinder; a certain amount of water is also injected, this having been found to improve the smoothness of running as well as to increase the power. The constituents of the oil that have a flash point above 220° F. and from the "hard base," are thrown against a collecting surface, whence they run down into a receiver as a thick, black, tarry liquid. This arrangement prevents the trouble which attends the use of heavy crude oils through the "hard base" entering and scoring the cylinder and clogging the valves. The governor regulates the supply of air and oil and the resulting vapor in such a way as to secure that the mixture admitted to the cylinders is correctly proportioned to the load on the engine; and by means of a hand lever, which can be locked in any position, it can be almost instantly set to give a speed variation of over 50 per cent. For starting a spray of oil from the atomizer, worked from a reserve of oil and compressed air normally left in the tanks provided for the purpose, is lighted and directed upon the vaporizer, which in consequence is quickly heated, a few turns of the fly wheel then sufficing to set the engine in motion."

MAY BUY THE WESTERN MARYLAND.

The recent tour of inspection of New York Central Railroad officials over the Western Maryland and the Coal and Coke lines, the latter controlled by former Senator Henry G. Davis, has given rise to the rumor that the big Vanderbilt corporation is casting eyes at the Western Maryland. The Coal and Coke, which was built by former Senator Davis to develop extensive coal properties in West Virginia, would furnish the greater part of the link needed for a connection of the Lake Shore railroad feeders with the Western Maryland.

There is no present connection between the New York Central and the Western Maryland, but the lines could be joined by building 89 miles of track between Cumberland and New Haven, Pa., where the Pittsburg and Lake Erie would be met. The latter road is controlled by the Lake Shore and Michigan Southern, a Vanderbilt line.

Before the plan for the reorganization of the Western Maryland was promulgated such a connection was contemplated and surveys even were made, the idea being to extend the Western Maryland to New Haven, use the tracks of the Pittsburg and Lake Erie from that point to Clarendon, Pa., where connection would be made with the Wabash-Pittsburg Terminal into Pittsburg.

Owing to opposition on the part of those in control of the Wheeling and Lake Erie and the Wabash-Pittsburg Terminal, which were to be links in the new independent system between Baltimore and Pittsburg, this project was temporarily abandoned, but in some quarters it is still believed that it will eventually be consummated if the Western Maryland is not absorbed by one of the larger systems.

THE CENSUS SCHEDULES FOR MANUFACTURERS

United States Census Director Durand has announced two very material changes in the schedule for manufactures to be carried by the special agents employed in collecting the data for the Thirteenth Census.

"At the censuses of 1900 and 1905," said the Director, "the manufactures schedule called for the average number of men, the average number of women, and the average number of children under 16, employed during each month in each establishment. Could this question have been answered accurately, it would undoubtedly have furnished information of much value and of greater value than that which we we are now proposing to secure. To answer this interrogatory with strict accuracy would, however, require the special agent or the manufacturer, filling out the schedule, to go in detail through every pay-roll of the year, usually either 52 or 26 in number, counting the number of men, women and children separately on each—the segregation of those under 16 involving peculiar difficulty, particularly in the case of the earlier pay-rolls of the year—and averaging the count for each month.

"As a matter of fact, practically none of the returns at the preceding census were, I am convinced, based on actual analyses of the payrolls. They were, in nearly all cases, mere estimates made more or less offhand by the manufacturer or his bookkeepers, and there is every reason to believe that these estimates were often wide of the mark.

"The schedule, as it has been revised by the present census, calls for the number of men, women and children employed during one specific week only, and for the total number employed, without distinction of age or sex, on the first pay-roll of each month. The relative extent to which women and children are employed will be ascertained approximately from the figures for the selected week; and, although that week will not, perhaps, in some industries be typical of the year as a whole, the accuracy of the figures will more than compensate for the apparent sacrifice in the amount of information obtained.

"We have also deemed it wise to cut out the question with regard to classified wages to which I have just referred, and which appeared in the census schedules of 1900 and 1905. We have become convinced that for many establishments correct answers can not be obtained by any amount of effort, and that for other establishments the amount of effort necessary to obtain answers would involve expense and delay precluded by the limitations of our appropriations and requirements as to the date of publishing the results. Strictly speaking, this inquiry falls within the field of the Bureau of Labor rather than that of the Census Bureau.

"The schedule of manufactures hitherto has been overloaded. The special agents and manufacturers were practically forced in many cases to make estimates in replying to these two interrogatories, and this practice tempted them to regard estimates as sufficient also in replying to other interrogatories in the schedule. The intellectual integrity of the special agents was undermined by attempting to require of them work which they knew could not be done accurately within the time which they were allowed.

Requirements for Special Agents.

U. S. Census Director Durand states that the impression seems to have been gained by some people that the Census Bureau practically requires that all candidates for the positions of special agents for the collection of manu-

factures and mining statistics must be college graduates. This impression probably arose because the application blanks, provided for the examination to be held November 3, contains a number of questions which give the applicant the opportunity to state fully what, if any, college or university education he has had. "As a matter of fact," said the Director, "we are very anxious to get as special agents as many men as possible who have had practical business experience, and a college education is by no means required. The circular announcing the examination states specifically that it was desired as far as possible to obtain persons who have had college or university courses in statistics or economics, and persons who have had service in the accounting department of some manufacturing or other business establishment. This does not mean that a person must have had both such economic education and such practical experience.

"If a man has had good practical business experience, his lack of a college or university education will in no way militate against his appointment. On the other hand, good work can doubtless be secured in many cases from men who have had a thorough college training in economics and statistics, even though they have had little business experience.

"We have also noticed that a good many people who wish to be Census enumerators seem to think they must take the examination to be held November 3. That examination is intended for special agents who will collect statistics of manufactures and mining, and is not at all required for enumerators.

"The special agents are appointed by the Director of the Census in the first instance, and applications for the positions or for admission to the examination should be made direct to the Census Bureau. On the other hand, Census enumerators are designated in the first instance by the supervisors of the Census who are scattered through the country, although the enumerators thus selected require the subsequent approval of the Director. People wishing to be enumerators should therefore address their applications directly to the supervisor of the Census for the district in which they live.

"While the work of the special agents in manufactures and mining will begin in January, and while applications for the examination for this position should be made immediately, the enumerators will not take up their work until April 15, and applications to the supervisors will be in order for at least three months to come.

"The enumerators will ultimately be subjected to a test examination, but this examination will probably not take place before February and will be quite different in character from the examination for special agents to be held on November 3."

THE ANTHRACITE TONNAGE DROPS.

The anthracite coal tonnage for September aggregated 4,416,120 tons, a decrease of 795,000 tons, as compared with the same month of 1908. For the nine months of the present calendar year the tonnage totaled 44,586,888 tons, as compared with 47,020,188 tons for the corresponding period of last year. The total tonnage on the Pennsylvania for September was 454,869 tons, as compared with 553,343 tons for the same period of last year, while the tonnage for the nine months was 4,174,584 tons, as compared with 4,386,046 tons for the corresponding period of 1908.

PRECAUTIONS IN ALABAMA COAL MINES

A circular letter sent out by Chief Mine Inspector Ed. Flynn and Assistant Mine Inspectors James Hillhouse and Robert Neill of Alabama, from Birmingham, under date of October 4th, and which also bears the names of the four members of the State Board of Examiners, reads as follows:

To the Alabama Coal Mine Operators:

About one year ago the United States Government opened an experimental and testing station at Pittsburg, Penn., for the purpose of experiments with coal dust and gas, to ascertain their explosive qualities, and to test the different explosives that are used in coal mines for blasting purposes. As a result of these tests the United States Geological Survey, which department has charge of the testing station, issued a list of explosives that have been tested and considered safe in coal mines. Neither black powder nor dynamite appear on the list of permissible or safety explosives.

This department has been making an effort to prohibit the use of dynamite in the mines of this state, and has been very successful. We have also condemned the use of black powder where it is practicable to use one of the safety explosives, especially in dry and dusty mines. We have condemned the use of dynamite in all coal mines.

All the large coal-producing companies and a number of smaller ones are using safety explosives, but there is some dynamite being used; and it is with a view to stopping the use of dynamite entirely, and black powder where it is possible to do so, that prompts this department to issue this circular.

As cold weather approaches, the danger of explosions from dust and blown-out or windy shots increases. This department desires and solicits the co-operation of the coal operators in our efforts to prevent a recurrence of the disasters that have occurred each winter for the past five years, and which have been very destructive to life and property; and in order to do this we make the following recommendations:

1. That you prohibit the use of dynamite in your mines and use one of the permissible explosives in its place.
2. That where it is practical or possible to use one of the permissible or safety explosives in the place of black powder, and especially in mines that are dry and dusty, or that generate large quantities of explosive gas, safety explosives be used.
3. That where your mines are dry and dusty, you have them watered, roof, sides and bottom, as often as necessary to keep down the dust.
4. That you send clay into the mines and distribute it along the headings where it will be convenient for the miners, and that they be required to use it for tamping their shots.
5. That the operators of mines where black powder is being used have tests made with safety explosives, and if the safety explosive proves successful in breaking the coal, that it be used instead of black powder.

These recommendations are made in compliance with Section 1026 of the mining law, and you are respectfully requested to comply with same.

SAFE, STRONG EXPLOSIVE FOR PANAMA CANAL

Vice-Consul-General Claude E. Guyant, of Panama, reports that a British inventor has been giving tests on the Isthmus of a new explosive, which led the Canal Commission to order 20 tons of it for trial. Mr. Guyant writes concerning the product:

This explosive is claimed to be absolutely safe. The inventor has factories operating in Norway and England and one is being built in Alaska. It is stated that, inasmuch as this substance is in itself not an explosive, it is carried at ordinary freight rates by the transportation companies in England and Norway. This new product is composed of perchlorate of ammonia, nitrate of soda, dinitrotoluol, and several minor ingredients, such as paraffin for waterproofing, etc. It is claimed that it is 50 per cent stronger than the 66 per cent grade of dynamite, and that the cost of manufacturing will be over \$20 per ton cheaper.

The inventor's exhaustive tests before members of the Isthmian Canal Commission and officials of the Republic of Panama showed that it is absolutely impossible to explode it by ordinary methods. It was hammered with a sledge, shot into with a rifle, burned, and ordinary dynamite detonators were exploded in it both by fuse and by electricity, but the compound was inert. Not until a special detonator was inserted could the substance be exploded; but then, in the few charges that were set off, it showed itself more powerful than dynamite. It can only be set off by heating a

small platinum wire just inside the open end by an electric spark or fuse. It will not explode by concussion.

So confident is the inventor that he will secure the contract to furnish all the explosives to be used on the canal next year, that he has organized a \$100,000 local company here and will at once erect a factory, about a half mile from the city, with a capacity of between 6,000 and 7,000 tons per annum. It is expected that most of the output will be used by the Canal Commission, but if a demand for the explosive arises from other sources in the vicinity, especially along the West Coast of South America, the factory will be enlarged to meet the demand.

The inventor has gone to England to purchase the necessary machinery and arrange for the delivery of the raw material needed. Work on the factory will be started at once, and it is expected that it will be in operation in January, employing about 350 people, mostly women.

A FRESH TENNESSEE COAL FIELD.

Contractors in South Pittsburg, Tenn., have been awarded a contract for the construction of four miles of railroad to the new coal lands being developed by the recently organized Tennessee River Coal Company, whose principal stockholders are New York capitalists. The property is situated in Kings Cove, four miles from South Pittsburg, and from several entries made is proving the richest deposit of the celebrated Battle Creek coal ever found. A townsite has been marked out in Kings Cove and cottages and other buildings are being erected. The principal stockholders and the chief engineer, of New York, have been attending to the letting of contracts, etc. Several thousand dollars will be expended in the development of the property.

ORIGIN, HISTORY AND DISTRIBUTION OF COAL

From the Introductory Chapter to the Maryland Geological Survey Report on Coals, by WILLIAM CLARK BULLOCK.

Coal deposits of economic value have been found at all geological horizons from the Devonian to the Recent. The most important beds are of Carboniferous, Triassic, Cretaceous, and Tertiary age. Among these the Carboniferous coals have been much more extensively developed than those of later date. The most important coal deposits of central and eastern North America, of Europe, and of Australia are of Carboniferous age. To this horizon belong all the Maryland coals.

Coal is found on every continent. The chief sources of coal at the present day are in central and eastern North America, in the United States and Nova Scotia; in central and southern continental Europe and England; in eastern Australia; and in eastern and southern Asia, in Japan and India. Coal is also known to occur in South America and Africa. Its extent, even in the countries where it has been most extensively developed, is not fully established, and the known areas of its distribution are being yearly extended as industrial demands increase.

Coal is formed from vegetable debris. This is shown from the chemical composition of the materials and their association with definitely recognizable roots, trunks, branches, and leaves of a character typical of the period when the coal deposits were laid down. The state of preservation of the plant remains depends, to a considerable extent, on the stage of alteration of the materials, although the organic structure is generally entirely obliterated in the main body of all coal seams. Plant remains are generally present in the shales and clays overlying and underlying the coal bed, and it is not uncommon to find the layers beneath the coal penetrated by rootlets which branch in all directions, as in the soils and subsoils of the present day. At times these adjacent beds afford vast numbers of determinable plant remains in which the most delicate structures are preserved. In this way paleontologists have been able to show the character of the forests of the period of coal formation, and even to describe the accompanying insect life, caught in the exuding gum of trees.

Every gradation from unaltered vegetable debris through peat, lignite, bituminous coal, semi-bituminous coal, semi-anthracite, anthracite, graphitic-anthracite to graphite may be found, and there is every reason to believe that all of these materials have had a common origin, although their method of accumulation may have varied in different localities.

Two views have been advanced to account for the deposition of vegetable debris in sufficiently large quantities to produce beds of coal. By the first its origin would be explained through the growth and burial of the material in the place where it is now found; by the second through the transportation of the material by stream and shore currents from the nearby land of the period, and its deposition in shallow waters not far from shore, like other sediments.

By those holding the first view coal deposits have been compared to sphagnum, or peat-like, accumulations in marshes or cypress and mangrove swamps which have gradually spread along low shorelines for great distances, and, through slow subsidence, been buried and protected by muddy sediments. As coal deposits are often found at successive horizons through a thickness of thousands of feet, the same conditions of plant accumulations must

necessarily have persisted throughout the entire period, with the exception of longer or shorter interruptions when the muddy and sandy beds were laid down. By those holding this view it is considered impossible on any other grounds to account for the existence of vertical tree-trunks with their roots branching in the soil in which they evidently lived. A succession of 68 such forest growths has been described by Dawson in the Carboniferous strata of Nova Scotia.

By those holding the view that coal seams have been formed from vegetable debris derived from the adjacent land no other explanation is considered possible for the stratified character of so many coals, with their shale and clay partings. The gradual change at times of coal beds laterally into shaly and sandy deposits is also considered evidence of their origin in this way. Furthermore, the homogeneous and almost structureless character of many coals is cited, and the fact that the calcium sulphate of sea-water could readily reduce vegetable debris to a pulp-like mass, destroying all plant structures. The existence at times of marine organisms in deposits interstratified with the coal beds is likewise introduced to support the interpretation that the coal was formed in such cases in waters open to the sea and in a manner similar to other sediments.

In the light of this more or less conflicting evidence, it seems more than probable that both processes have been in operation, and that some coal beds have been formed in situ as first described, while others have accumulated in shallow waters like other sediments. Only in this way can all the phenomena be satisfactorily explained.

Many suggestions have been made regarding the climate during the period of formation of such extensive deposits of vegetable debris as characterize the Carboniferous and Cretaceous periods. Some have advanced the view that the amount of carbon dioxide in the atmosphere must have been far greater than at the present time. It is quite possible that there has been a diminution of this gas in the atmosphere in later geological periods, but it seems hardly probable that the amount at the close of the Paleozoic could have been greatly in excess of that now prevailing, since, even in the Carboniferous period, there were numerous air-breathing animals, such as the labyrinthodonts and the insects, which could hardly have existed in an atmosphere very different from that of the present day.

The suggestion that the climate must have been much warmer to account for such a luxuriant growth of coal-producing plants is likewise difficult of acceptance when there is the best of evidence of the existence of glaciers in Carboniferous time, even within the limits of the present tropical zone. It seems probable, however, that the climate was in general moist, since the flora of the period spread widely over the land areas of the globe, extending even into arctic latitudes.

The enormous thickness of the accumulation of vegetable debris may be appreciated when it is known that not less than seven feet of closely compacted vegetable debris is necessary to produce a foot of bituminous coal, and that to feet of similar material is required to produce one foot of anthracite coal. The Mammoth seam of the anthracite

region of Pennsylvania, which frequently has a thickness of 30 feet, would thus require 3,000 feet of closely compacted vegetable debris for its formation.

Reference has been made to the deposits associated with coal beds. In every region a certain definite association has been commonly found to occur, although exceptions to the rule are not infrequent. In general, the coal deposits rest upon a bed of clay, which, on account of the low percentage of the alkalies, has an important economic value as a fire-clay. Overlying the coal there is commonly a dark, more or less bituminous, shale, which, in turn, may be succeeded either by a lighter colored shale or sandstone. The underlying bed is the soil upon which the coal flora grew and from which the alkalies were extracted by the growing plants, while the overlying beds are the materials which, under varying conditions, were deposited upon and preserved the accumulated vegetable debris. Less frequently limestones and dolomites are found associated with the other deposits, depending upon whether the area became depressed sufficiently to produce open waters, with little or no transportation of muddy and sandy sediments.

The use of coal dates from the earliest times, although its consumption in large amounts covers only a short period. The Chinese made use of coal in the far-distant past, and the people inhabiting the northern shores of the Mediterranean also employed it from the earliest period of recorded history. Greek literature as early as the fourth century B. C. containing accounts of its properties. The ancient Britons were using coal at the time of the Roman invasion.

From these early periods the importance of coal as a fuel for simple metallurgical, smithing, and domestic purposes, came to be but slowly recognized until the invention of the steam engine in the middle of the eighteenth century brought about a greatly increased use of coal, which has advanced with rapid strides until today coal is the greatest single factor in the industrial life of the world.

Although it seems probable that the existence of coal in America was known to the Indians before the advent of the whites, the first authentic use of it for commercial purposes dates from the year 1769, when a blacksmith in Pennsylvania employed anthracite for fuel in his forge. Notwithstanding this and other local uses of coal in the anthracite region, the beginning of the Pennsylvania coal trade dates from 1807, when the first regular shipments of coal began on the Susquehanna river. By 1820 this had materially increased, and from that time to the present day the anthracite coal trade has had a rapid development. Great difficulty was encountered in earlier years in making people believe that mineral coal could be successfully used as fuel, and the earliest shippers of Pennsylvania anthracite accompanied their shipments, taking grates which were set up in public houses to demonstrate the use and value of this fuel.

The use of bituminous coal also dates from the latter part of the eighteenth century, a coal mine being reported as opened in the vicinity of what is now the city of Pittsburgh much earlier than the date of the first authentic use of anthracite. It is known, however, that after 1794, when the first steam engine was employed in Pittsburgh, the demand for bituminous coal increased, and that within a few years a number of mines had already been opened in the region. Bituminous coal was not employed to any extent for industrial purposes until about 1825, in which year it is reported that about 3,500 tons of coal were used in the vicinity of Pittsburgh. From that time on the soft coal output has increased rapidly until it now surpasses that of anthracite. The Northern Appalachian coal field, from its proximity to the manufacturing centers, has always been

the most important bituminous coal field in the United States.

Although coal was discovered near Frostburg at least as early as 1782, the first eastern shipments from the Maryland coal district were not made, so far as known, until 1820, when small amounts were transported by barges down the Potomac river. Since the construction of the Baltimore & Ohio Railroad in 1842, and of the Chesapeake & Ohio Canal in 1850, output from Maryland mines has rapidly increased, and numerous companies are now engaged in the mining of coal in Maryland.

Development of the southern Appalachian coal field dates from a later period than the northern Appalachian field, although coal was mined in the Birmingham, Ala., district as early as 1836. It was not, however, until after the close of the Civil War that the importance of the district became apparent.

Of more importance even than the anthracite and bituminous coals of Carboniferous age in the eastern states in these early days were the Triassic coals of the Richmond basin in Virginia, which, until the late thirties, were more extensively mined than any other coal beds of the United States except the anthracite coals of Pennsylvania. As early as 1789 shipments had been made from this region to northern cities. This field is, however, of relatively small importance at the present day compared with the great areas of Carboniferous coal to the westward.

The coal fields west of the Alleghenies were much later in development than those of the eastern fields, although the bituminous coal of the interior region was already mined to some extent during the decade from 1830 to 1840. Considerable shipments were made down the Ohio river soon after 1840, and from that time on the importance of the coal deposits of the interior became more and more marked as the region became more fully settled.

The development of coal on the Pacific coast was of still more recent date, the industry attaining little importance until after 1860, when coal began to be shipped in considerable quantities to San Francisco and other points from mines in California, Oregon and Washington. The development of the coal industry on the Pacific coast has encountered many vicissitudes because of the many difficulties encountered in the mining operations.

CARS OFF THE HOME LINES.

That trunk line railroads cannot be compelled to send their cars off their own lines when needed to handle their own business, notwithstanding the Elkins amendment to the Hepburn act, which provides that railroads shall establish through routes and through rates, was the sentiment expressed by Senator S. B. Elkins at a meeting of the Charleston, W. Va., chamber of commerce with officials of the Coal and Coke Railway.

"It is a question which will be up in Congress soon," said Senator Elkins. "It has never been decided, and even if the Interstate Commerce Commission makes a decision it will be carried to the courts. The trunk lines will soon need all their cars for their own business, and I doubt if we can compel them to send their cars to another road."

TRANSFERRED TO THE FEDERAL COURT.

On motion of the defense Judge Barker, in the Scott county district court, at Davenport, Ia., transferred the case of the United Coal Mining Company against the Milwaukee road to the federal court. The case is one wherein the plaintiff asks for an injunction restraining the Milwaukee from refusing to haul its coal in Iowa. It is claimed that the road refuses to haul coal shipped from Illinois unless it is released into Milwaukee cars.

MORE STORIES OF THE NEGRO

In Society.

The negro barber on a limited train running from an Eastern city to Chicago was once shaving a man whom he recognized as a well-known merchant of Albany. The barber worked with especial skill and was rewarded with a substantial fee.

When the barber was telling the other employes of the train of his good luck, he announced pompously:

"He's shore a mighty fine genulman, dat Mr. Smith; jes' a nice a man as you'd wantar meet. I's often been in his sto' in Albany, but dis is the fust time I's ever met him socially."

Convenient Legs.

"Providence," said the deacon, "sho' do look after de culled race."

"How come?" demanded Brother Dickey.

"Well, hit's disaway: De nigger baby ez dey say, walk too soon."

"Sho do," assented Brother Dickey.

"Dat makes him bowlegged."

"Now you talkin'."

"An' bowlegs is de mos' convenientest legs in de worl' for climbin' a tree w'en a possum's on de top limb."

He Got Off Easy.

Clark Howell, of Atlanta, tells of the sad case of an elderly ducky in Georgia charged with the theft of some chickens. The negro had the misfortune to be defended by a young and inexperienced attorney, although it is doubtful whether any one could have secured his acquittal, the commission of the crime having been proved beyond all doubt.

The ducky received a pretty severe sentence. "Thank you, sah," said he, cheerfully, addressing the judge when the sentence had been announced. "Dat's mighty hard, sah, but it ain't anywhere near what I 'spected. I thought, sah, dat between my character and dat speech of mah lawyer dat you'd hang me shore!"

A Flare-Back.

"Brudder Jones, if you didn't smoke you might own a brick house, like what I does."

"Look here, man, don't you come pesterin' wif me like dat. You didn't git dat brick house by not smokin'. You got it by borrowin' mah newspaper to read, an' mah clothes to wear, an' mah vittles to eat. You may be a fly financier, but dat don't gib you no license to set up for a human copy-book!"

An Uncertain Property.

There was before the war, a slave who wanted to buy his freedom. Since he was a very good slave, his master would not sell him to himself at any price. But as the war approached its end the master changed his mind. He sent for the slave one morning and asked him if he was still of the same mind about purchasing himself. The slave scratched his head, looked at the ground, and faltered: "Well, Marse Henry, Ah di wantar buy mahs'i, but Ah been a-studin' erbout it right smaht lately, sah, an' Ah done come to de 'clulsion dat in dese times colored prop'ty am too onsartin, sah, to put any money in."

Just What He Wanted.

Representative Livingston says that he was once in a little cross roads store in Georgia, when an old ducky came shambling in.

"Hello, Uncle Mose!" the proprietor greeted him. "I hear that you got converted at last, at the camp-meeting and have given up drinking."

"Yas sar, ah done seed de error of mah ways an' turn roun' an' headed fer der narrer path," Uncle Mose declared fervently.

"Well, you deserve a great deal of credit for that, Uncle Mose," the merchant said, approvingly.

"Yas, sah, tank yo', sah," Uncle exclaimed, delightedly: "dat's des what ah thought, an' ah 'lowed ah'd come hyah an' git yoall to git me credit for some side meat an' meal."

Warning in Time.

In his desire to use fine language, the ducky of the South frequently allows his ideas to become a trifle confused, as well as confusing.

A handbill announcing a "colored picnic" to be held in a grove near Mobile was once freely circulated. After various enticing announcements concerning the delights in store for the partakers in the entertainment, the bill concluded with the following perplexing notice, printed in italics:

"Good behavior will be strictly and reservedly enjoined upon all present, and nothing will be left undone which will tend to mar the pleasure of the company."

The Eternal Lottery.

Gov. Vardaman of Mississippi tells an amusing instance of the negro's attitude toward matrimony.

A ducky clergyman in the state named had married two negroes and after the ceremony the groom asked: "How much yo' charge fo' dis?"

"I usually leave that to the groom," was the reply.

"Sometimes I am paid \$5, sometimes \$10, sometimes less."

"Five dollahs is a lot o' money, pahson," said the groom.

"Ah'll give yo' two dollahs, an' den ef Ah finds Ah ain't got cheated, Ah'll give you mo' in a monf."

In the stipulated time the groom returned. "Pahson," said he, "dis here arrangement's a kind o' spec'lashun, an' Ah reckon youse got de worst of it. Ah figgers dot yo' owes me a dollah an' seventy-five cents."

Height of Politeness.

"Near my home over in Virginia," says the business woman, "there is a small Baptist church where every Sunday a negro called Uncle Rufus preaches. I have always suspected that Uncle Rufus doesn't know how to read, though he won't confess it. I am sure his eldest daughter selects his texts for him, but I wouldn't dare tell him I think so. He came to see me the last time I was at home, and I promised to send him a new Bible from Washington. His last name is Robertson or Robinson, and when I was asking how I should address the package I inquired how he spelled his name. Uncle Rufus wasn't to be caught by any such transparent trick as that."

"Well, Miss Betty," he said, "I ain't a-going to tell you how I spells it. You jes' spell it the way you likes best. I certainly ain't going to dictate to a lady."



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